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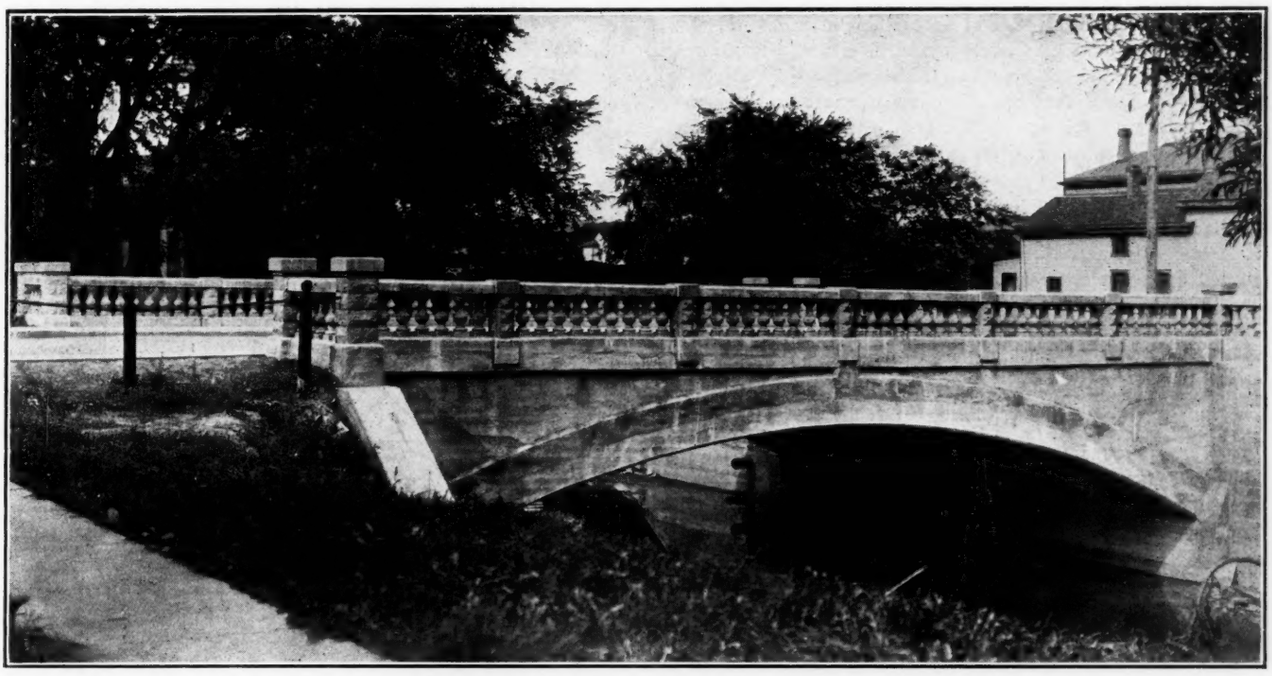


STEEL-CONCRETE BRIDGE OVER ONONDAGA CREEK, SYRACUSE, N. Y.

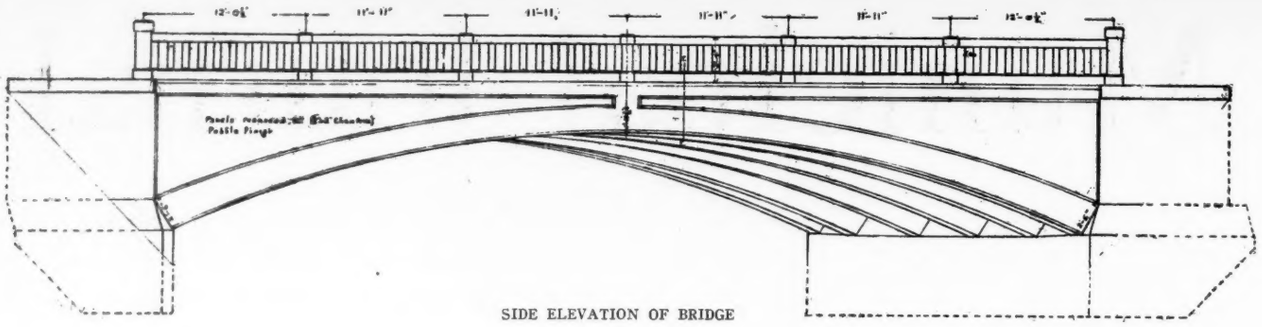
STEEL-CONCRETE ARCH BRIDGE

Steel Arches Enclosed in Concrete, Supporting Reinforced Concrete Floor Slabs — No Difficulty Offered by Considerable Skew — Method of Bringing Steel Ribs to Position — Finishing Concrete Surfaces

THERE has recently been completed in Syracuse, N. Y., a bridge over Onondaga Creek at Dickerson Street which contains some unusual features. The bridge has a most decided skew, amounting to 30 degrees, 35 minutes and 10 seconds. The span of the bridge betweeen abutments is 60 feet, measured at right angles to the face of the abutments, this being the standard width of Onondaga Creek fixed for all bridge crossings, river walls, etc., in that section. Owing to the skew the length of each arched rib is 69.2 feet from abutment to abutment. The roadway of the bridge is 22 feet wide between curbs, and there is a sidewalk on each side having a width of 5 feet in the clear. While the bridge has been called a reinforced concrete bridge, it is in reality a steel arch bridge composed of six arched beams, each of concrete enclosing a steel girder, and the floor is of reinforced concrete slabs supported by these beams. The steel is thus entirely enclosed and the bridge has the appearance of being one of concrete alone.

The rise of each steel girder or rib is 7½ feet. These ribs are lattice girders, the top and bottom chords each being composed of two angles 3½ x 3½ x ½ for the ribs under the sidewalk, and 5 x 3½ x ⅝ for the four ribs under the roadway and curb. The lacing of all ribs is of 2½ x 7/16 inch bars, 2 ft. 4 in. long, at the abutments, 2½ x ⅜-inch bars near the center. Each rib is hinged at each abutment, revolving around a 4½-inch pin held by steel footing plates which are anchored to the skewbacks. This hinge joint is entirely embedded in concrete, and serves merely to permit ready adjusting of the rib to place during construction.

Each rib is encased in a vertical concrete slab 14 inches thick, extending from abutment to abutment, and filling the spandrel spaces and extending up to the level of the floor. These slabs or beams are of solid concrete, each beam being made at one continuous operation so as to be monolithic. No reinforcement is used in them other than the ribs which they enclose. The



SIDE ELEVATION OF BRIDGE

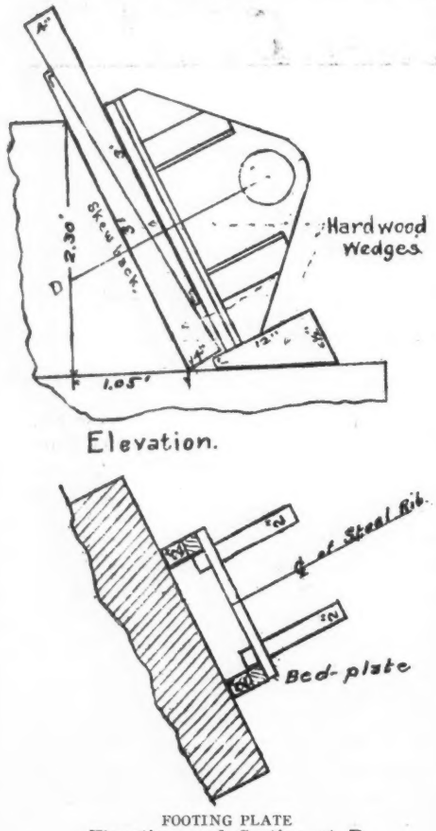
faces of the two outside ribs which are exposed to view are recessed two inches in triangular panels, the edges of the recess being chamfered and the recessed portion being given a pebble finish. The remaining surfaces are plain finish.

Resting upon these concrete beams is a roadway floor slab composed of concrete 7 inches thick reinforced with ⅝-inch square corrugated bars spaced 6 inches apart and 1½ inches from the lower face of the slab, and at the sidewalks concrete slabs 5 inches thick reinforced with ⅜-inch corrugated bars similarly spaced.

The sidewalk is completed by a one-inch top wearing coat similar to ordinary sidewalk surface construction. The roadway is constructed as follows: Three inches of concrete are placed upon the concrete floor slab, with a dry joint between the two. On this is placed a one-inch sand cushion, followed by a surface material of vitrified paving brick. The 22-foot roadway has a crown of 5 inches. The sidewalk at the curb is 6½ inches above the gutter and has a slope of 1¼ inches in the 6 feet between the curb and the outside edge.

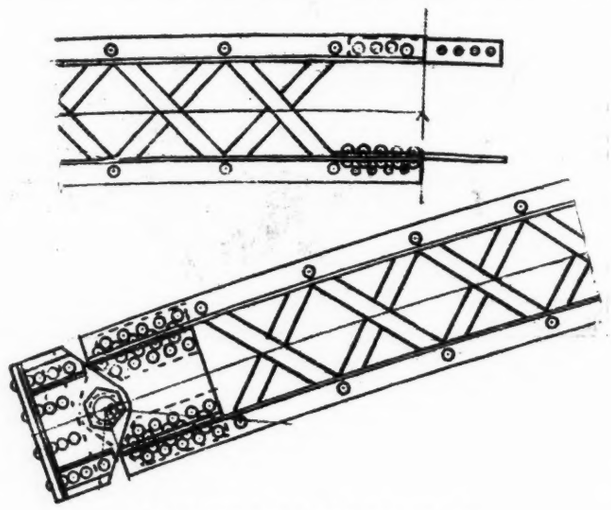
Along the sides of the bridge is carried a railing of concrete posts and rails, made in moulds in the form of artificial stone, the whole being of a generally square and rectilinear form, without any attempt at ornamentation.

In the construction, the foundations and abutments were first constructed. When the concrete composing the latter had fully set the footing plates were set in place and brought to the exact position by driving between the bed plate and the face of the skewback two hard-wood wedges on each side of the bed plate. By the use of these the pin holes in the footing plates were brought into line and at the same time the correct distance apart. When this had been done the arches were set up and securely stayed in position, after which the bed plates were backed with mortar thoroughly rammed between them and the skewback. Wooden forms were then set up for concretng the ribs, and each girder was completed without interruption. The centering was kept up until the concrete had thoroughly set.



FOOTING PLATE
Elevation, and Section at D

The concrete was made of three grades. The first grade, used in the sidewalk ribs, the curb ribs from the bottom of the roadway, the bottom of the sidewalk slab and the floor slab of the roadway, contains stone from ¼ inch to 1¼ inches in greatest dimension. The second grade, which included all arch ribs except those parts just mentioned, contains stone from ¼ inch to 1½ inches in greatest dimension. The third grade, which included abutments, wings and concrete blocks under the posts of the guard rails, contains stone up to 2½ inches in greatest dimension. All concrete was composed of one volume of cement, three of sand or crusher dust and six of broken stone or gravel. It was mixed in a Foote mixer, it being specified that "The mixing shall continue until every face of every particle of stone or gravel is completely covered with mortar." The concrete was mixed quite wet, as seemed to be necessary to insure a thorough filling of all spaces around the latticed ribs. Except in the case of the recessed panels before referred to, the stone was crowded back from the face of the form with a broad-tined fork so as not to show upon the surface. All exposed angles were chamfered. The interior surfaces of the forms were of dried and matched lumber, and as soon as they were removed all exposed faces, except the pebble finish panels, were rubbed smooth with a float and water. The pebble finish was obtained by permitting the stone to come close to the form, and scrubbing the surface with wire brushes as soon as the forms were removed, so that the stones would show upon the surface.



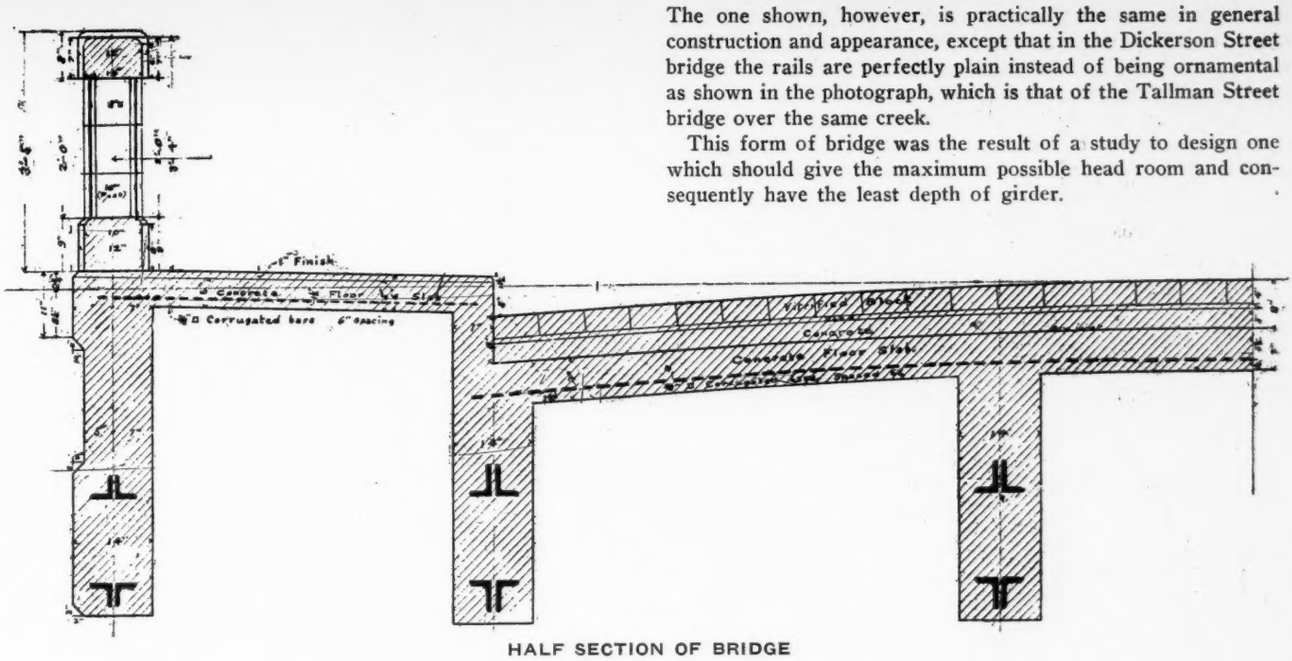
HINGE END AND CROWN END OF RIB
Rib is made in two halves, joined at the crown

The bars used for reinforcement were of the style known as new style corrugated bar manufactured by the Corrugated Bar Company. All steel was required to be acid or open-hearth process steel, the plates and shapes being of medium steel, rivets of rivet steel and bolts of soft steel.

The photograph accompanying this article is not that of the Dickerson street bridge, as at the time of writing that bridge had not yet been sufficiently completed to obtain a photograph.

The one shown, however, is practically the same in general construction and appearance, except that in the Dickerson Street bridge the rails are perfectly plain instead of being ornamental as shown in the photograph, which is that of the Tallman Street bridge over the same creek.

This form of bridge was the result of a study to design one which should give the maximum possible head room and consequently have the least depth of girder.



HALF SECTION OF BRIDGE

MUNICIPAL ASSESSMENTS

System Employed by Board of Assessors of Cleveland, O.—Assistance of Local Real Estate Experts Availed of—Front Foot Values as the Unit—Land and Buildings Valued Separately

POSSIBLY no function of the city government is of greater importance, and none, we believe, is on a less scientific basis, than the manner of assessing values for the purpose of taxation. Moreover few matters of public interest, it is probable, are given less publicity than this; this probably being for the very reason that the assessing is so lacking in method, and the justice of individual assessments so difficult to defend, that the assessors avoid the necessity for the latter by concealing the rates as far as possible from public inspection. A few cities have adopted something approaching a system in the matter of fixing values, but we fear that in the majority of cases the assessors simply consider each property by itself, assigning to it a value according to their judgment and possibly their mental attitude for the time being.

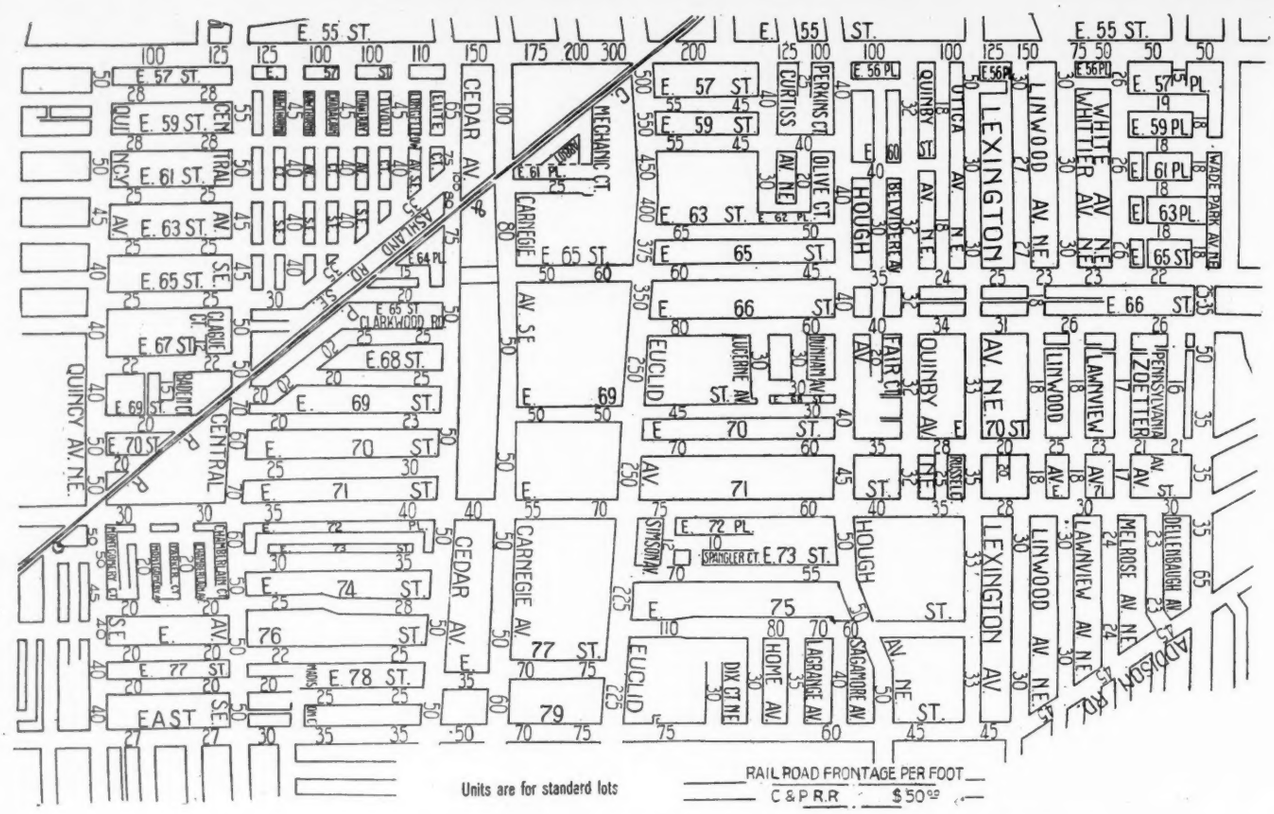
Anything approaching a logical system of assessing which can be explained and defended is certainly worthy the investigation of all municipal officials. At the present time there is under discussion in the city of Philadelphia the assessment recently completed by the Board of Revision of Taxes which has been most severely criticised, and a joint committee of Councils is having an investigation made by independent experts in an effort to determine the true value of the land and the value of the buildings located thereon, based upon the system which has been adopted by the city of Cleveland and also in whole or in part by other cities. This system has recently been described by the Board of Assessors of the city of Cleveland in a report giving a detailed account of the method of assessing values in that city, this being a quadrennial assessment which becomes effective Dec. 20, 1911.

One of the ideas adopted by the Board is to secure the assistance of as many as possible of the citizens who are competent to fix real estate values, these being termed "Auxiliary Citizen Committees." At the present time there are acting with the Board committees from seventeen associations, districts or citizens' organizations, these including improvement associations, district societies and the like, in addition to which are thirty-five real estate experts especially requested by the Board to give their advice. The Board consists of five members of which Mr. Arthur S. May is president. The chief clerk is Mr. W. A. Somers, who was formerly city engineer. In addition more than 100 clerks are employed under thirteen foremen. These clerks and the other employees are of an ability higher than is ordinarily found in similar positions, about 125 of them being college graduates. The plan or system employed was one largely devised by Mr. Somers and it is believed Cleveland is the first city to use this system for a thorough and complete valuation of its real estate.

The citizens at once appreciated the idea of publicity, and the general aim of the Board to be perfectly fair in its valuation. Ordinarily the average property owner is interested, not in the actual value placed upon his property, but in how this value compares with that assigned to other property in his city. It is the aim of this system to make the values relatively equal so far as possible. The actual figures, however, were believed to be equitable, and so confident was the Board of this that it made the standing offer, "Give the Real Estate Board an option for thirty days at our appraisal. If they can not sell it at that figure we will reduce it." This offer was taken up in but one instance.

The Board proceeded on the hypothesis that nobody is as conversant with the relative value of property as the citizens themselves in the neighborhood. Each association having been given a district map and the Board having fixed the highest value therein, it was assured, through a representative committee of various interests and residents of different sections in the district, of a report of correct relative values. In viewing all the property of the city the Board found some districts valued too high and some too low, but the relativity was always good and fair.

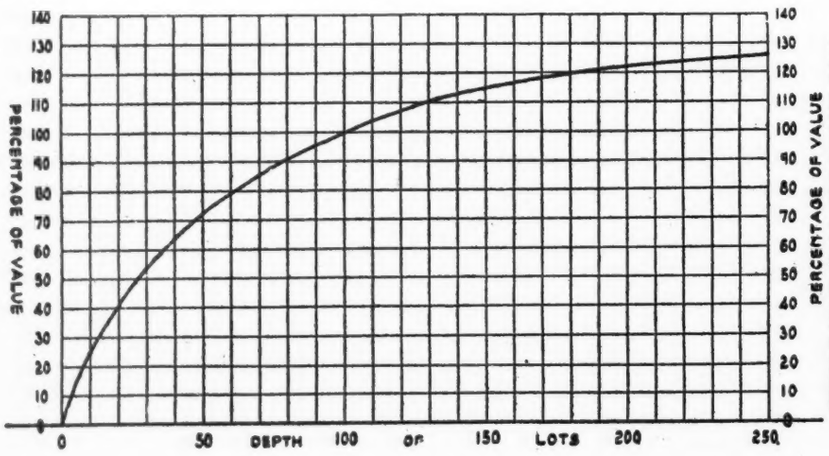
In working out this system maps were first made of the city showing only the streets and blocks. In each street in front of each block was written the value of a lot in the middle of the block facing on that street and 100 feet deep. Such a map is shown in the accompanying illustration. The figure in each case represents the value in dollars per front foot 100 feet deep. This serves as the unit of calculation for that particular block. If a lot is deeper than 100 feet its value is increased, and if shallower is decreased correspond-



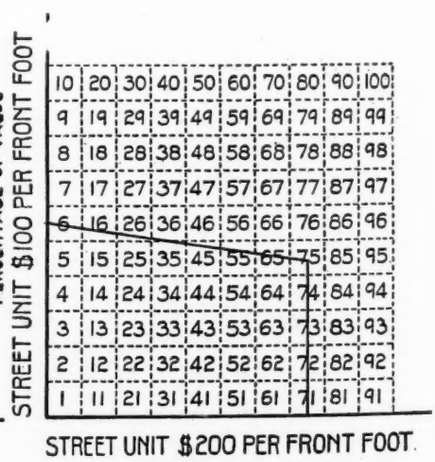
MAP SHOWING UNIT FIGURES ESTABLISHED BY BOARD OF ASSESSORS OF CLEVELAND

ingly. The rate of increase or decrease is, of course, not proportional to the depth; but a curve has been worked out, based upon the experience and opinions of a great number of real estate experts, and shown in the accompanying diagram, from which is read off the relative values for each depth of lot. For instance a lot 50 feet deep on a street where the front foot value is $20.00 would be worth 72½ per cent of this or $14.40 per front foot. A lot 150 feet deep on a $20.00 street would be worth $23.00 per front foot.

Another condition affecting value is the position relative to street corners. A corner lot is generally held at higher value than one in the middle of the block, and the values on both the intersecting streets affect the value of the corner lot and those adjacent to it. In calculating such values Mr. Somers divides a street corner into 100 squares each 10 by 10 feet, and assigns a value to each square, this value depending upon the unit value on that street. A regular formula was used for assigning values to these 10 foot squares, of which the unit value on each of the intersecting streets was a function. Values having been assigned to each of these squares, the value of any lot on the corner or within 100 feet of it was determined by adding together the values of the squares contained within it. As an illustration, taking lots fronting on a street with a unit value of $100 per front foot, one 100 feet deep is estimated to be worth $151 per front foot if the frontage be 100 feet and the unit value of the side street be also $100. If the unit value of the side street be $50.00, however, the value is $121 per front foot; and if the side street unit value be $10.00 the value is $109.00 per front foot. With a narrower lot the increase in value per front foot is greater. Thus, with a 20 foot lot and a side street of $10.00 unit value, the value per front foot is $128.00; while if the side street has a unit value of $50.00 the value per front foot is $163.00, and if the side street have a unit value of $100.00 the front foot value is taken at $148.00. There has been some complaint that corner properties assessed in this way are over appreciated, but quite the contrary has been found to be the case where any definite knowledge of their real value was known by recent sales or leases.



CURVE SHOWING PERCENTAGE OF VALUE FOR LOTS OTHER THAN 100 FEET DEEP



ASSESSING IRREGULAR CORNER LOT

Other methods have been devised for estimating odd-shaped lots, for allowing for alleys, etc. Considerable difficulty was experienced in valuing factory property fronting on a railroad. There seemed to be no general notion concerning such values nor was there agreement or uniformity of opinion on any single proposition concerning them. The Board, after much study and examination, decided to treat railroads, rivers and water fronts as streets of separate influence or value. In Cleveland various railroad frontages were given values varying from $10.00 to $50.00 per front foot; different sections of the Lake Erie frontage values of $40.00 to $75.00 per front foot, and frontages on Cuyahoga river $80.00 to $150.00 per front foot. Special methods were also employed in valuing railroad property. It was also necessary, in assessing property in the outskirts, to figure out values per acre based on a previously assumed value per front foot 100 feet deep. Thus, if the front foot value were $2.00 a lot 100 feet deep would be assessed at $670.00 per acre; one 200 feet deep, $461.00; one 400 feet deep, $271.00, and one 800 feet deep at $149.00 per acre.

In no case was the value of both the land and the building of a given property estimated as a unit, but the value of the land was estimated separately as indicated above, and to this was added the value of the building, if any, estimated separately. In fact, one of the fundamental ideas of Mr. Somers is that it is impossible to properly assess lots as a whole, and still more difficult to assess lots and buildings combined; but that the only fair way is to assess the real estate by its value per front foot as this is affected by general locality and position relative to the corner, and to determine the value of the building by estimating the cost of reproducing it and deducting a certain depreciation percentage. In order to estimate the value of the buildings a separate form was made out for each building in the city, the total number of which was 96,431. Ninety-three buildings were inspected on the first day, the average per day was 1,580 and the highest number for any one day was 2,872. The form upon which each building is described was so arranged as to require merely check marks or numbers to be inserted, thus minimizing the amount of writing to be done. A regular system or table of depreciations was used. For instance, in the case of stores and dwellings a brick building in good repair and 10 years old was assumed to have depreciated 17 per cent, and 34 per cent if in bad condition, while the depreciation at 20 years of age was assumed at 26 and 50 per cent, respectively. A frame building 20 years old was considered to have depreciated 34 per cent if in good condition, 38 per cent if in fair condition and 63 per cent if in bad condition. In addition a district depreciation was applied where a change in the character of a district had depreciated the property throughout the district. A special discount was allowed on all residences fronting on street car lines. A table of square foot values was used for all ordinary conditions, so that reference to the form describing any particular building would give the unit floor value per square foot; this was multiplied by the number of square feet, and this again by the depreciation values for age and locality. Where the actual construction value of the building was known, allowance was made for the relative price of building material at the time of construction. It is interesting to note that the prices in 1907 were estimated to be about 60 per cent higher than in 1897, in which year the prices were the lowest.

In connection with this assessment a number of investigations were conducted, one of these being a census of the pedestrian traffic on certain of the business streets. The figures taken at certain of the more prominent places during two six-hour days in 1909 varied from 7,558 to 21,048. Concerning this the Board states, "While traffic figures are not absolutely conclusive of values, they show to a certain degree a relativity hardly otherwise acquirable. All pedestrians have not equal purchasing power, some are in a hurry on the way home, and hence in no shopping mood; some localities have greater prospects without traffic, while others have seen their best days. These things must all be taken into consideration and only like properties should be compared."

ASPHALT PAVEMENT SPECIFICATIONS

Recommended by Committee of American Society of Municipal Improvements—Provision for Use of Oil Asphalts—Asphaltic Residuums Defined

As stated last week, the American Society of Municipal Improvements received, at its October convention, reports from four sub-committees appointed by it to submit forms for standard paving specifications. That of the Committee on Asphalt Paving, of which Mr. F. P. Smith was chairman, was as follows. It is hoped that these specifications will be criticised, not only by members of the society, but by others interested therein, with a view to evolving a final form of specifications which will be approved and adopted by all cities.

REPORT ON ASPHALT PAVEMENT SPECIFICATIONS

The specifications herewith submitted practically cover the same range and materials as those adopted by the Society for Standardizing Specifications at Chicago last winter, but the arrangement is quite different and, we think, somewhat more logical. We have also attempted to clear up some of the points which have been left obscure in the Chicago specifications. Under our specifications, so-called natural asphalts, the California oil asphalts and a number of mixtures of different asphalts are permitted, but no greater latitude has been allowed in this respect than was allowed by the Chicago specifications. There is ample evidence to prove that California oil asphalts, when properly manufactured, are in every respect suitable for the laying of sheet asphalt pavements. Numbers of very excellent pavements have also been laid with mixtures of asphalts such as the following: Trinidad and California "D" grade, Bermudez and California "D" grade, Cuban and California "D" grade, California "D" grade and Texas, Gilsonite fluxed with asphaltic flux; and in many instances the mixture has been preferable to the hard natural asphalt alone. For this reason it is believed that mixtures of proper materials should be permitted when their composition is known and approved. Mixtures laid under various trade names should also be admitted under the same restrictions; but, surely, it is not wise to purchase mixtures sold under a trade name alone without any assurance as to the ingredients contained in them or that these ingredients or proportions will not be changed in the near future.

Where mixtures of this kind are permitted, it is absolutely essential that the different asphalts used should be carefully examined and tested by a competent laboratory. Many of the larger cities now have such laboratories established, and smaller cities adopting these specifications should unquestionably employ competent expert advice in connection with them, as no city engineer is competent to decide upon the chemical and physical points involved in the examination of the different bitumens admitted under these specifications.

Some of the tests in the Chicago specifications which are of no value whatever have been cut out. It will be noted that the ductility requirements for asphalts produced by the distillation of asphaltic oils are higher than those called for in so-called natural asphalts. This is not intended as a discrimination against oil asphalts, but is due to the fact that, when properly prepared, they naturally possess a higher ductility than most of the so-called natural asphalts. Their ductility can be reduced by blowing during the process of distillation, but it is questionable whether this does not deleteriously affect the quality of the asphalt; and for this reason it was deemed best, for the present at least, to specify a minimum ductility such as would readily be complied with by asphalts of this class produced by the ordinary methods of distillation.

An attempt has been made to define asphaltic residuums and semi-asphaltic residuums, as without some such definition the terms themselves are meaningless.

In order to facilitate a consideration of the specifications, a skeleton grouping of the different heads and sub-heads is given in connection with them:

Outline of Sheet Asphalt Pavement Specifications

General Description
Binder.
Wearing Surface.
Materials
Definitions.
Refined Asphalts.
Kinds Admitted.
Fluxes.
Kinds Admitted.
Binder Stone.
Sand.
Filler.
Samples.
Asphalt Cement
Preparation.
Requirements.
Binder
Preparation.
Laying.
Requirements.
Wearing Surface
Preparation.
Laying.
Requirements.
Condition at Expiration of Guarantee.
Repairing.

Sheet Asphalt Pavement Specifications

General Description

Upon the foundation prepared and laid, as elsewhere herein specified, shall be laid the pavement proper This shall consist of:

Binder—1. A binder course .. inches in thickness when compressed.

Wearing Surface—2. An asphalt wearing surface .. inches in thickness when compressed.

Materials

The materials used must comply with the requirements of the specifications and be suitable for use upon the street or streets to be paved. They shall be mixed in definite proportions by weight, depending upon their character and the traffic upon the street and upon the character of the materials used, and such materials and proportions must be satisfactory to the engineer.

Definitions—Crude Natural Asphalt shall be construed to mean any natural mineral bitumen, either pure or mixed with foreign matter, from which, through natural causes in the process of time, the light oils have been driven off until it has a consistency harder than 100 penetration at 77° F.

Asphaltic Petroleum shall be construed to mean those petroleums which, when treated in the manner specified below, will give a residue having a ductility at 77° F. of 25 cms. or over.

Semi-asphaltic Petroleums shall be construed to mean those petroleums which, when treated in the manner specified below, will give a residue having a ductility at 77° F. of between 5 cms. and 25 cms., and this residue after being maintained at a temperature of not over 77° F. for 48 hours must have a bright and glossy surface which shows no signs of crystallization.

Method for Examination of Petroleums—Two hundred grams of the petroleum is to be placed in an open dish and subjected to a temperature in an air bath of not to exceed 500° F. until the residue so obtained has a penetration at 77° F. of 50. This residue is then to be tested for ductility at 77° F.

Refined Asphalts—Asphalts whose value for making pavements has not been established in the judgment of the engineer by sufficient practical experience will only be accepted under such special bond and guarantee provisions as the engineer may prescribe.

The preparation and refining of all asphalts admitted under these specifications shall be subject to such inspection at the paving plants and refineries as the engineer may direct.

Subject to the preceding conditions and definitions, the following types of refined asphalts will be admitted under these specifications, provided that when made into asphalt cements by the use of such materials and methods as are described in these specifications they will produce an asphalt cement complying with the requirements elsewhere set forth herein for asphalt cements.

All tests herein specified must be conducted according to official methods on file in the office of the engineer. All penetrations at 77° F. are expressed in hundredths of a centimeter and are to be taken (except where otherwise specified) with a No. 2 needle acting for five seconds under a total weight of 100 grams.

Kinds Admitted—1. Refined asphalts prepared by heating crude natural solid asphalts without the addition of any other material to a temperature not exceeding 400° F. until all water has been driven off. Such asphalts must melt readily upon the application of heat.

2. Refined asphalts produced by the careful distillation of asphaltic petroleum until the resulting asphalt has a consistency not harder than 20 penetration at 77° F. Combinations of asphatic and semi-asphaltic residues will also be admitted under this section. Such asphalts and combinations must comply with the following requirements:

a. They shall contain not less than 98.5 per cent of bitumen soluble in cold carbon disulphide.

b. When 20 grams of the asphalt are heated for 5 hours at a temperature of 325° F. in a tin box 2½ inches in diameter after the manner officially prescribed, it shall not lose over 5 per cent by weight nor shall the penetration at 77° F. of the residue left after such heating be less than half the penetration at 77° F. of the original sample before heating.

c. When the asphalt is brought to a penetration at 77° F. of 50 by the use of the flux with which it is to be used and then made into a briquette having a cross section of one square centimeter, it shall have a ductility of not less than 25 cms. at 77° F.

3. Refined asphalts produced by combining crude natural solid asphalt with either or both of the following:

a. Residuums obtained by the distillation of petroleum oils as specified under fluxes.

b. Asphalts obtained from the distillation of asphaltic petroleums as specified under paragraph 2 of this section.

Where more than 5 per cent of flux is used in the preparation of refined asphalts of this class, only such fluxes shall be used as, when mixed with the solid asphalt or combination of asphalts employed, will produce an asphalt cement complying with the requirements hereinafter set forth under that head.

Fluxes—These shall be the residues obtained by the distillation of paraffine, asphaltic or semi-asphaltic petroleums, and shall be of such character that they will combine with the asphalt to be used to form a suitable asphalt cement complying with the requirements of these specifications.

All residuums must have a penetration greater than 350° with a No. 2 needle at 77° F. under 50 grams weight for one second, and must remain soft after heating for five hours at 400° F.

Kinds Admitted—a. Paraffine residuums shall have a specific gravity of .92 to .94 at 60° F. They shall not flash below 350° F. when tested in a New York State closed oil tester, and shall not lose more than 5 per cent by weight when heated for 5 hours at 325° F. in a tin box 2½ inches in diameter after the manner officially prescribed. The residue after heating shall flow at 77° F.

b. Asphaltic residuums shall have the same general characteristics as paraffine residuums except that they shall have a specific gravity between .98 and 1.04 at 60° F. When tested according to the method elsewhere herein prescribed for the examination of petroleums, the residue so obtained shall have a ductility at 77° F. of 25 cms. or over.

c. Semi-asphaltic residuums shall have the same general characteristics as paraffine residuums, except that they shall have a specific gravity between .94 and .98 at 60° F. When tested according to the method elsewhere herein prescribed for the examination of petroleum, the residue so obtained shall have a ductility at 77° F. of between 5 and 25 cms., and must have

a bright and glossy surface which shows no signs of crystallization.

d. A natural Maltha may be used if it passes the heat and flash tests specified under *"a."*

Binder Store—This shall be clean, hard stone, free from any particles that have been weathered, or otherwise soft material. It shall all pass a 1¼-inch screen. Not less than 85 per cent of the stone shall pass this screen in its largest dimensions, and of the remaining 15 per cent no piece shall have a larger dimension than 2 inches. The stone shall be so graded from coarse to fine as to have the following mesh composition: (sieves to be used in the order named)

Passing			
10 mesh	10 to 35%	Total, 25 to 50%	
2 "	10 to 35%		Total passing 1 mesh, 45 to 85%
1-inch mesh	20 to 60%	Total, 50 to 75%	
1¼ " "	15 to 55%		

The above limits as to mesh composition are intended to provide for such permissible variations as may be rendered necessary by the available sources of supply and the character of the work to be done. The mesh composition and character of the stone may be varied, within the limits above specified, at the discretion of the engineer, depending upon the kind of asphalt used and the traffic conditions upon the street or streets to be paved.

Sand—The sand shall be hard, clean grained and moderately sharp. On sifting it shall have the following mesh composition (sieves to be used in the order named):

Passing		
200 mesh	0 to 5%	
100 "	10 to 25%	Total passing 80 mesh and retained on 200 mesh, 20 to 35%
80 "	6 to 20%	
50 "	15 to 40%	
40 "	10 to 30%	
30 "	8 to 25%	
20 "	5 to 15%	
10 "	2 to 10%	
8 "	0 to 5%	

On very light traffic streets, a coarser sand may be used with the approval of the engineer, but in no case shall a sand be employed that contains less than a total of 15 per cent passing an 80 mesh sieve, such total to contain not more than 5 per cent (calculated on the original sand) passing a 200 mesh sieve.

The above limits as to mesh composition are intended to provide for such permissible variations as may be rendered necessary by the available sources of supply and the character of the work to be done. The mesh composition and character of the sand may be varied, within the limits above specified, at the discretion of the engineer, depending upon the kind of asphalt used and the traffic conditions upon the street or streets to be paved.

Filler—This shall be thoroughly dry limestone dust or Portland cement, the whole of which shall pass a 30 mesh per linear inch screen, and at least 66 per cent of which shall pass a 200 mesh per linear inch screen. The surface mixture shall contain from 6 to 20 per cent of this filler, depending upon the kind of sand and asphalt used and the traffic conditions upon the street or streets to be paved.

Samples—Samples of the refined asphalt, petroleum flux and asphalt cement that the contractor proposes to use in his work, together with a statement as to the source, character and proportions of the materials composing them, must be handed in with his bid and no contract shall be awarded to any bidder whose samples do not comply in every respect with these specifications. No asphalt other than that specified in his bid shall be used by any contractor except with the written consent of the engineer.

In addition to the samples submitted with the bids, other samples taken from and actually representative of the refined asphalt, petroleum flux, sand and filler to be used upon the street shall be submitted to the engineer before the use of such materials in the work is permitted. Except at his option, no work on binder or surface shall be commenced within three weeks from the date when such samples were submitted and in no case shall they be used until they have been examined and approved by him. Whenever, during the course of the work, new deliveries of paving materials are received by the contractors, samples of these shall at once be submitted to the engineer and their use in the work will not be permitted until they have been examined and approved by him.

ASPHALT CEMENT

Preparation—The asphalt cement shall be composed of refined asphalt or asphalts and flux, where flux is required, of the character elsewhere herein specified and must be of a suitable degree of penetration. The proportion of the refined asphalts comprising the cement shall in no case be less than 40 per cent by weight. Only an asphaltic or semi-asphaltic flux shall be used in the preparation of these asphalt cements in which more than a total of 25 pounds of flux to every 100 pounds of solid natural asphalt are required in order to produce an asphalt cement of the proper consistency.

The proper proportion of the refined asphalt or asphalts and the flux shall be melted together and thoroughly agitated by suitable appliances until they are completely blended into a homogeneous asphalt cement. The asphalt cement must never be heated to a temperature exceeding 350° F. If the asphalt cement contains material that will separate by subsidence while it is in a molten condition, it must be thoroughly agitated before drawing from storage and while in use in the supply kettles. Approved methods of agitation, which will not injure the cement, must be used.

The refined asphalt or asphalts and flux comprising the asphalt cement shall, when required, be weighed separately in the presence of the authorized inspectors or agents of the engineer.

Requirements—The asphalt cement shall comply with the following requirements:

a. It shall have a penetration between 45 and 75 at 77° F., depending upon the sand and asphalt used and the traffic upon the street on which the pavement is to be laid.

b. It shall not flash below 350 deg. F. when tested in a New York State closed oil tester.

c. When heated in an open tin at a temperature of 325 deg. F. for five hours in a hot air oven it must not show a loss by volatilization of over 5 per cent. and the penetration at 77 deg. F. of the residue left after such heating must not be less than one-half the penetration at 77 deg. F. of the original sample before heating.

d. When the pure bitumen of the asphalt cement is brought to a penetration at 77 deg. F. of 50 and made into a briquette having a cross section of one square centimeter it shall have a ductility of not less than 15 cms. at 77 deg. F.

BINDER

Preparation—The binder shall be composed of stone and asphalt cement of the character elsewhere herein specified and mixed in proper proportions. If the stone does not contain the proper amount of material passing the ½-inch screen, the deficiency may be made up by the addition of gravel or sand. The stone and the asphalt cement shall be heated separately to such a temperature as will give, after mixing, a binder mixture of the proper temperature for the materials employed. The stone when used must be at a temperature between 200 and 325 deg. F. The asphalt cement when used must be at a temperature between 250 and 350 deg. F. The asphalt cement and stone shall be thoroughly mixed by machinery in such proportions that the resulting binder shall have life and gloss without an excess of asphalt cement and the mixing shall be continued until a homogeneous mixture is produced in which all the particles are thoroughly coated with asphalt cement.

Laying—The binder mixture prepared in the manner above described shall be brought to the street in wagons at a temperature between 200 deg. F. and 325 deg. F. and shall be covered with canvas covers while in transit. The temperature of the binder mixture within these limits shall be regulated according to the temperature of the atmosphere and the working of the binder. On reaching the street it shall at once be dumped on the concrete and then be deposited roughly in place by means of hot shovels, after which it shall be uniformly spread by means of hot iron rakes and then at once be thoroughly compacted by tamping or rolling. The depth of the finished binder

shall at no place be less than 1 inch or more than 3 inches and its upper surface shall be parallel to the surface of the pavement to be laid. The surface, after compression, shall show at no place an excess of asphalt cement and any spot covering an area of 1 square foot or more showing an excess of asphalt cement shall be cut out and replaced with other material. Smaller spots may be dried by the use of stone dust and smoothers. All binder that shows lack of bond or that is in any way defective or which may become broken up before it is covered with wearing surface must be taken up and removed from the street and replaced by good material properly laid in accordance with these specifications at the expense of the contractor. No more binder shall be laid at any one time than can be covered by two days' run of the paving plant on surface mixture. Binder when laid shall be followed and covered with wearing surface as soon as is practicable in order to effect the most thorough bond between the binder and the wearing course. The binder course shall be kept as clean and as free from traffic as is possible under working conditions. If necessary it must be swept off immediately before laying the wearing surface upon it.

No binder shall be laid when in the opinion of the engineer the weather conditions are unsuitable or unless the concrete on which it is to be laid is dry and has set a sufficient length of time.

Requirements—The finished binder must contain from 5 to 8 per cent. of bitumen soluble in cold carbon disulphide and from 10 to 30 per cent. of material passing a 10-mesh screen, the percentage of bitumen to be regulated in accordance with the mesh composition and character of the mineral aggregate of the binder and the percentage of material passing a 10-mesh screen to be regulated in accordance with the traffic conditions upon the street or streets to be paved.

Wearing Surface

Preparation—The wearing surface shall be composed of sand, filler and asphalt cement of the character elsewhere herein specified and mixed in proper proportions. The sand and the asphalt cement shall be heated separately to such a temperature as will give, after mixing, a surface mixture of the proper temperature for the materials employed. The sand when used must be at a temperature between 250 deg. F. and 375 deg. F. The asphalt cement when used must be at a temperature between 250 deg. F. and 350 deg. F. The filler shall be added to the hot sand in the required proportions and the two thoroughly mixed. The asphalt cement in the proper proportions shall then be added and the mixing continued for at least one minute in a suitable apparatus until a homogeneous mixture is produced in which all the particles are thoroughly coated with asphalt cement. The weights of all materials entering into the composition of the wearing surface shall be verified in the presence of inspectors as often as may be required and the engineer or his representative shall have access to all parts of the plant at any time.

Laying—The surface mixture prepared in the manner above described shall be brought to the street in wagons at a temperature between 230 deg. F. and 350 deg. F. and shall be covered with canvas covers while in transit. The temperature of the surface mixture within these limits shall be regulated according to the temperature of the atmosphere and the working of the mixture. On reaching the street, it shall at once be dumped on a spot outside of the space on which it is to be spread. It shall then be deposited roughly in place by means of hot shovels, after which it shall be uniformly spread by means of hot iron rakes in such a manner that, after having received its final compression by rolling, the finished pavement shall conform to the established grade and have a thickness of not less than .. inches. Before the surface mixture is placed, all contact surfaces of curbs, manholes, etc., must be well painted with hot asphalt cement. After raking the surface mixture shall at once be compressed by rolling or tamping, after which a small amount of cement shall be swept over it and it shall then be thoroughly compressed by a steam roller weighing not less than 200 pounds to the inch width of tread, the rolling being continued until a compression is obtained which is satisfactory to the engineer. Such portions of the completed pavement as are defective in finish, compression or composition, or that do not comply in all respects with the requirements of these specifications, shall be taken up, removed and replaced with suitable material, properly laid, in accordance with these specifications, at the expense of the contractor. Whenever so ordered by the engineer, a space of 12 inches next the curb shall be coated with hot asphalt cement which shall be ironed into the pavement with hot smoothing irons.

No wearing surface shall be laid when in the opinion of the engineer the weather conditions are unsuitable or unless the binder on which it is to be placed is dry. The finished pavement must be well protected from all traffic by suitable barricades until it is in proper condition for use.

Requirements.—The finished pavement shall contain between 9.5 per cent. and 12.5 per cent of bitumen soluble in cold carbon disulphide, depending upon its mesh composition and the character of the sand used and the traffic to which it is to be subjected, but in all cases sufficient asphalt cement must be used to properly coat all the particles of the mineral aggregate. It must also contain not less than 1 per cent. of mineral matter passing a 200-mesh sieve and not less than a combined total of 25 per cent. passing the 200, 100 and 80-mesh sieves. On streets of light traffic, when the engineer has approved the use of a coarser sand than that specified for general use, the surface mixture must contain not less than 6 per cent. of mineral matter passing a 200-mesh sieve and not less than a combined total of 18 per cent. passing the 200, 100 and 80-mesh sieves. The maximum amount of 200, 100 and 80-mesh material in the pavement will be regulated according to the kind of sand and asphalt used and the traffic upon the street on which the pavement is to be laid subject to the maximum requirements elsewhere herein specified under sand and filler.

The above limits as to mesh composition and per cent. of bitumen are intended to provide for such permissible variations as may be rendered necessary by the raw materials used and the character of the work to be done. The composition of the wearing surface may be varied within the limits above specified at the discretion of the engineer, depending upon the kind of sand, filler and asphalt used and the traffic conditions upon the street or streets to be paved.

Condition at Expiration of Guarantee

In addition to the proper maintenance of the pavement as provided for elsewhere herein, the contractor shall, at his own expense, just before the expiration of the guarantee period, make such repairs as may be ordered by the engineer and as may be necessary to produce a pavement which shall:

a. Conform substantially in grade to the pavement as first laid.

b. Be free from cracks more than 3 feet in length.

c. Contain no disintegrated surface mixture.

d. Not have been reduced in thickness more than ¼ inch in any part.

e. Have a foundation free from cracks or defects.

f. Be in substantial accord with the specifications under which the pavement was laid, except as otherwise provided for in this section.

Repairing

Whenever the repairs made at any one time shall amount to more than 50 per cent. of the surface of any one block, the entire pavement on that block shall be taken up and relaid. These repairs, except as provided for below, shall in all cases be made by cutting out the defective binder and wearing surface down to the concrete and replacing them by new and freshly prepared binder and wearing surface made and laid in strict accordance with these specifications.

Whenever any defects are caused by the failure of the foundation, the pavement, including such foundation, shall be taken up and relaid with freshly prepared material made and laid in strict accordance with these specifications.

The surface heater method of repairing may be used only in those cases where the repairs are not rendered necessary by:

a. Failure of concrete.
b. Failure of the binder.
c. Failure caused by the disintegration of the lower portion of the wearing surface.

Whenever the surface heater method is employed, all defective surface shall be removed before replacing it with new material. In all cases the old surface shall be removed to a depth of not less than ¼-inch and the new surface must, when compressed, be not less than ½-inch in thickness. The heat shall be applied in such a manner as not to injure the remaining pavement. All burnt and loose material shall at once be completely removed and, while the remaining portion of the old pavement is still warm, shall be replaced by new and freshly prepared wearing surface made and laid in strict accordance with these specifications.

BARRINGTON PARKWAY

Making a Picturesque Road Among Barren Drumlins—Deep Cut Necessary—Construction of Concrete Bridge—Cost of Improvement

UNDER the supervision of the Metropolitan Park Commission of the State of Rhode Island, an unsightly line of barren glacial drumlins, which extend along Providence River and formerly were practically worthless and inaccessible, is being transformed into one of the most beautiful scenic parkways in the United States. Beginning at Warren avenue, just across the Seekonk River from Providence, the new parkway enters these drumlins in a southwesterly direction and winds southerly and southeasterly along Providence River for about two and one-half miles, where it joins and is continued in Pawtucket avenue, a well-traveled highway.

The general route of this parkway is shown upon the accompanying map. About one-third of a mile from Warren avenue the road reaches the summit of a hill, to the east of which rises the highest of the drumlins, the view from which up and down Providence River and across to the city itself is unsurpassed in that section of the country. A little beyond this the parkway follows the line of an old 50-foot road which was little traveled. The property owners on each side of this have donated 20 feet more, making the total width 90 feet, 40 feet of which is to be used for a roadway, 15 feet on each side of this for a planting space, and a 10-foot strip on each side of the parkway for sidewalks.

About a mile from Warren avenue the road descends on a 6 per cent grade to a narrow neck of land jutting out into a salt pond, known as Watchemoket Cove, where the tide sweeps in and out from the Bay through a narrow inlet. A reinforced concrete arch bridge, spanning this inlet, is to join this neck to the opposite side of the cove. Rising from here and winding back from the river the road continues for another mile and terminates in Pawtucket avenue, which connects Providence with Warren and Bristol and in which is located a trolley line.

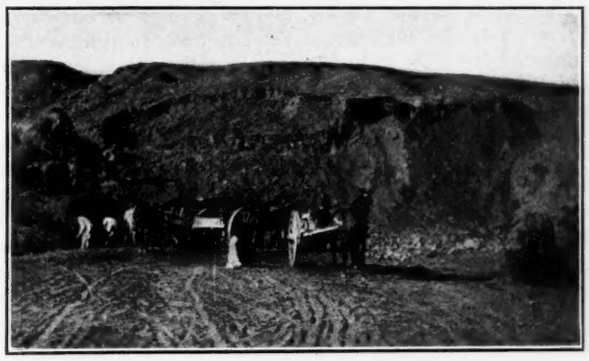
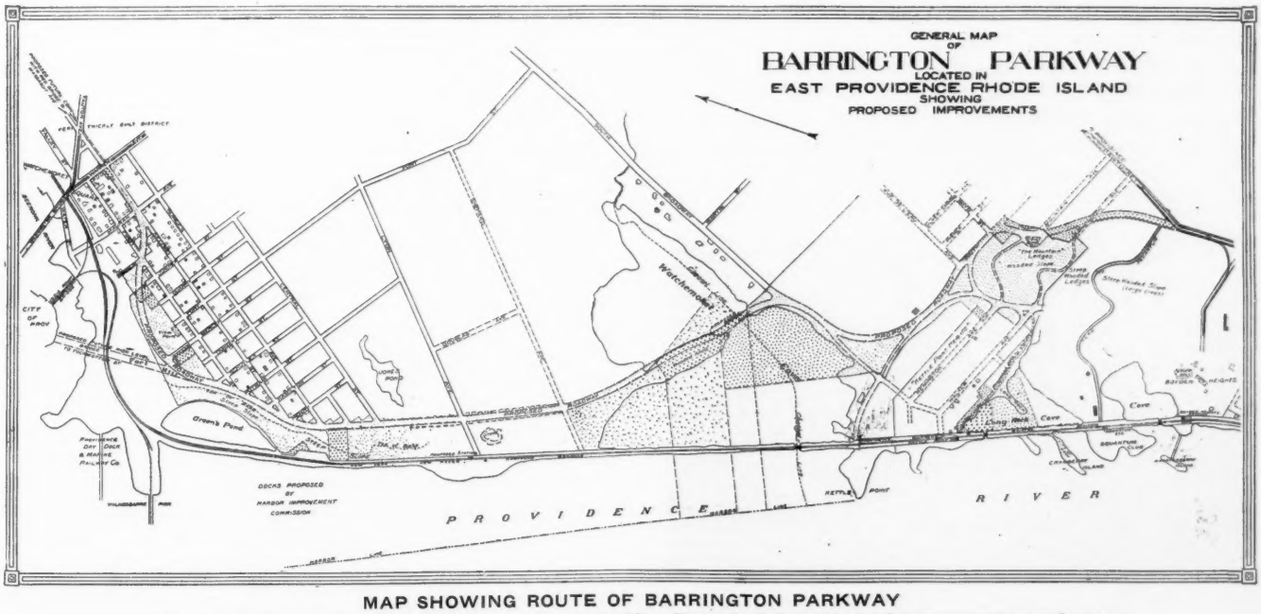


FIG. I—DEEP CUT THROUGH GLACIAL DRIFT

In addition to serving as a parkway which will be beautiful in itself and afford several fine views of the river and bay, the new route shortens the distance from Providence to all points in the southeastern part of the State by about one mile; and it is anticipated that it will be one of the most traveled roads in the State, as it will in addition be the natural approach to Providence from points in Massachusetts to the east of that city. It is the only parkway in the State which follows the line of the waterfront offered by the bay and river.

Most of the land for the roadway has been acquired by purchase or gift, as has also considerable of that bordering on one or both sides, including a considerable area which will be developed as a small park a short distance from Pawtucket avenue. It is the intention to preserve the natural features and to greatly improve them by planting trees and sodding slopes of cuts, and otherwise taking advantage of the rolling topography of the drumlins. Advantage has been taken of all natural groves and tree plantings, Figure 3 illustrating a line of large maples close to which the road was carried.

The entire roadway is to be given a crown of 0.6 feet for a 40-foot roadway. Gutters are to be built of cobble on each side. A drain of vitrified pipe calked with dry oakum will be laid 3½ feet below the gutter on one side only along the entire line of the roadway; except that where the road enters the



MAP SHOWING ROUTE OF BARRINGTON PARKWAY
Open-dotted areas, land acquired by purchase or gift. Close-dotted areas, land necessary to condemn

first hill after leaving Warren avenue, center and side drains will be used. On the side of the road not provided with a drain, concrete inlets will be located in the gutter at low points and connected by vitrified pipe to catch basins directly across the road.

Six per cent is taken as the "ruling grade" along the parkway, but a short distance south of Warren avenue even this grade is not sufficient to avoid the necessity for a considerable cut at the top of a knoll, this reaching a depth of 35 feet and requiring the removal of 48,000 cubic yards, of which 4,000 have been used for fill to the north of the cut and the remainder is being used for filling low land in the neighborhood. This cut, as in fact is most of the land encountered, is a glacial deposit of sand and gravel, the excavation of which with pick and shovel is comparatively easy. This sand and gravel mixed is used as a foundation for the roadway throughout the entire route. The general nature of this soil and the excavation at this point is shown in Figure 1.

At certain sections along the road rock was encountered outcropping. In removing this a Wood steam drill was used, and the rock was crushed with a Climax crusher for use in concrete construction of culverts and bridges.

The concrete bridge over Watchemoket Cove is being built of concrete proportioned 1:2:4, mixed in a Ransome mixer, from which it is carried in steel wheelbarrows and dumped into the forms, it being provided that the maximum drop shall

FIG. 2.—VIEW OF PROVIDENCE FROM THE HIGHEST DRUMLIN

not exceed two feet as a precaution against the stones separating out from the mortar. The stone is spaded back from the forms to secure a smooth surface, and the concrete is tamped with a 7-pound tamping iron. Double horizontal reinforcement is used in the arch in the form of Kahn trussed bars spaced one foot apart and one and one-half inches from the upper and lower faces of the arch ring. Light Kahn bars are also bound to the upper and lower reinforcing bars, at right angles to them, to hold them in place during the tamping of the concrete. In placing the concrete it is first rammed under the bars and against the forms to insure that the bars are kept at least one and one-half inches from the face of the structure.

The abutment walls are reinforced vertically and horizontally with similar bars. In place of wing-walls, the riprap which now exists along the shore of the neck of land adjacent to the bridge is carried around to join the abutment walls. The abutment is supported by 18 wooden piles.

This entire work was let out by contract, the price for earth

FIG. 3—ROAD ALONG GROVE OF MAPLES

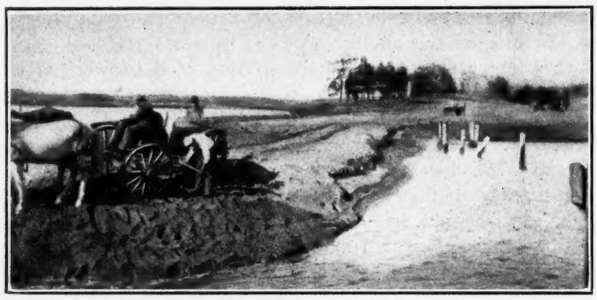


FIG. 4—VIEW FROM BRIDGE ALONG NECK OF LAND

excavation being 37 cents per cubic yard and that for rock $2, these prices being about one-half those of the highest bidder. All slopes and grassy parts must be left growing green and all signs of recent construction removed before the work is accepted. The total estimated cost of construction of this two and one-half miles of parkway is $60,000. The cost of acquiring adjoining land for the purpose of preserving and beautifying the natural features will be approximately $75,000. Some of the adjoining land was given by the owners abutting upon the parkway, who appreciated the value of it to their property. The total cost has been secured by a State bond issue, but eventually the cities and towns along the line of the parkway will pay for the improvement, such payment being in proportion to the benefits received, the allotment of which has not yet been decided upon.

INADEQUATE FIRE PROTECTION

Liability of Water Works Companies for Fire Losses Caused by Insufficient Water Supply—Opposite Rulings in Different States

By JOHN SIMPSON

A CONTRACT between a city and a water company, whereby the latter agrees to construct, maintain and operate a system of water works in the city, and to maintain at all times a sufficient pressure of water in the mains for fire purposes, does not create a privity of contract between the company and a citizen or resident of the city which will entitle the latter to maintain an action against the company to recover for a loss by fire, on the ground that, if the required water pressure had been maintained, the fire would have been extinguished and the property saved. Boston Safe-Deposit, etc., Co. v. Salem Water Co., 94 Fed. 238. This rule has been adopted in the States of Alabama, Connecticut, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Massachusetts, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New York, Ohio, Pennsylvania, Tennessee, Texas, Vermont and Wisconsin.

Although the inhabitants are interested in the contract made for their benefit, this interest is almost universally held not to be such as to give them the right to sue for its enforcement, or for damages occasioned by a failure to enforce it.

Mr. Farnham, in his work on "Waters and Water Rights," comes to the conclusion that the decisions adverse to the individual's right to maintain such action are correct in result, but are based on the wrong principle. He considers that the nonliability of the water companies depends, not on want of privity of contract, but on the fact that the companies are not insurers against fire losses, and their agreements to furnish water are not agreements to extinguish fires. But the courts have never adopted this view (Lovejoy v. Bessemer Water Works Co., 146 Ala. 374) and have so far rested their decisions on want of privity of contract.

In Wainwright v. Queens County Water Co., 78 Hun. (N. Y.), 146, the court held the relation of the individual taxpayer to the water company analogous to his relation to the person who sells the fire engine or the hose to the fire district. Such vendors would not be liable to the owner if, from the bursting of a defective hose or the breaking down of a defective engine, the extinguishment of a fire was made impossible.

(Davidson v. Nichols, 93 Mass., 514; Losee v. Clute, 51 N. Y., 494; Coughtry v. Globe Woolen Co., 56 N. Y., 127.)

Even where the supply of water for fire purposes is paid for by a special levy of taxes upon the taxpayers of the city there is no such privity of contract between a citizen or resident and the water company as will authorize him to maintain an action against it for the injury or destruction of his property by fire. (Becker v. The Keokuk Water Works, 79 Iowa, 419; Mott v. Cherryvale Water Co., 48 Kan., 15; Hone v. Presque Isle Water Co., 104 Me., 217.)

Nor will the fact that the water company contracts with the city to pay all damages that may accrue to any citizen of the city, by reason of a failure on the part of the company to supply a sufficient amount of water, or a failure to supply the same at the proper time, or by reason of any negligence of the water company, constitute such privity of contract. (Mott v. Cherryvale Water, etc., Co., 48 Kan., 12; Smith v. Great South Bay Water Co., 82 N. Y. App. Div., 427; Howsmon v. Trenton Water Co., 119 Mo., 304; Boston Safe-Deposit, etc., Co. v. Salem Water Co., supra.)

Three States, however—Kentucky, North Carolina and Florida—have refused to follow the general rule and hold to the contrary doctrine.

The first State in which a water company was held liable for failure to furnish sufficient water for the extinguishment of fires was Kentucky. In 1889 the Court of Appeals of that State (in Paducah Lumber Co. v. Paducah Water Supply Co., 89 Ky., 340) first gave its opinion that a water company must answer in damages to a citizen for loss by fire resulting from its failure or refusal to perform its contract with the city to furnish at all times a supply of water sufficient for the protection of the inhabitants and property of the city against fire. Neither a provision in the contract that the rent of the fire hydrants was to cease in case of a suspension of the water supply for longer than five days, nor the reserved right of the city to rescind the contract for that cause, could be construed to release the company from liability for the non-performance of the contract while it was in force. This case was adversely commented upon by the Federal Court in the above case of Boston Safe-Deposit, etc., Co. v. Salem Water Co., and criticised in several opinions in other States where the doctrine of non-liability is held.

In Mott v. Cherryvale Water & Manufacturing Co., 48 Kan., 12 (1892), it was pointed out that in the Paducah case there was an express contract between the lumber company and the water supply company, by which, in consideration of rent paid for the use of the two hydrants on its own lot, water was agreed to be furnished directly to the lumber company.

In Howsmon v. Trenton Water Co., supra; Britton v. Green Bay, etc., Co., 81 Wis., 48; House v. Houston Water Works Co., 88 Tex., 233; and Fitch v. Seymour Water Co., 139 Ind., 214, the decision was also criticised. In the Texas case, House v. Houston Water Works Co., 88 Tex., 233 (1895), the court argued: "If the city had been operating its own water works, and had failed to supply water, as did the defendant, and the same consequences had resulted to plaintiff, it would not have been liable for the property burned. And we think that the defendant, acting under a contract in performance of the duty imposed upon the city by law, could not be charged with greater responsibility than the law imposed upon the city itself."

The Kentucky court, however, has consistently adhered to its first ruling. The Paducah Water Supply Co. case was followed in Duncan v. Water Co. (Ky.), 12 S. W. 557, 15 S. W. 523, and in Graves County Water Co. v. Ligon, 112 Ky., 775 (1902). In the latter case it was pointed out that the first decision was rested by the court on the ground that such a contract is made by the city as the corporate representative of its citizens, and for their benefit; and that they may, therefore, maintain an action under the rule allowing one to maintain an action on a contract made by a third person for his benefit. "It is," said the court, "universally held that the city is not liable to the property owner for the loss of his property. It is equally clear that the city can not sue the water company and recover damages for the loss of private property. The result is that if the owner can not himself sue for the loss of his property, he is without redress, although his property has been destroyed by the breach of a contract made for his benefit by the city. We are not prepared so to hold." This ruling has been affirmed in subsequent decisions. In Shelbyville Water & Light Co. v. McDade, 122 Ky., 639 (1906), it was held that if the water company failed to maintain such a pressure of water as was required by the city ordinance, and the plaintiff's property was burned by reason thereof, when it would not otherwise have been destroyed, a verdict for the plaintiff should be rendered.

In Owensboro Water Co. v. Duncan's Adm. (Ky.), 32 S. W. 478 (1895), it was held that the plaintiff, a private citizen, could not recover where there was evidence that the apparatus of the fire department was insufficient for the quantity and force actually supplied.

In Lexington Hydraulic & Mfg. Co. v. Oots (Ky.) 84 S. W. 774 (1905), it was held that the water company's liability to an individual property owner was not affected by the fact that the company's contract with the city provided that the failure of the company to comply with it should, at the option of the city, work a forfeiture of the company's right to rentals, and, if continued for 30 days, should authorize the city to terminate the contract.

But even in Kentucky a water company is not bound to furnish water at all hazards, the act of God or the public enemy alone excepted, and a water company was held not liable under its contract for a deficiency of water at the time of a fire, caused by an accident to one of its wells occurring without negligence. (Springfield Fire & Marine Ins. Co. v. Graves County Water & Light Co. (Ky.), 85 S. W. 205.) And the water company would not be liable where the loss arose from a defect in the fire cistern, which was constructed by, and under the control of, the city, and it was proved that there was an abundant supply of water in the mains. (Terrell v. Louisville Water Co. (Ky.), 105 S. W. 100.)

The Kentucky doctrine was followed in North Carolina—Gorrell v. Greensboro Water Supply Co., 124 N. C., 328 (1899); Fisher v. Greensboro Water Supply Co., 128 N. C., 375 (1901), and Jones v. Water Co., 135 N. C., 553 (1904)—on the principle that the taxpayer is the real party in interest. He is taxed with payment of his *pro rata* of the annual rental. The town cannot maintain the action for him. If any recourse is to be had at all, h alone can sue.

The Kentucky doctrine has also since been followed in Florida—Mugge v. The Tampa Water Works Co., 52 Fla., 371 (1906). In this case it was held that a water works company which, by the terms of its contract with the city, enjoys extensive franchises and privileges, such as the right to use the streets with its mains and hydrants, and to have special taxes levied on the property of the citizens to pay for its supply of water for use in extinguishing fires, enters upon a public calling and owes a duty to the taxpayers to furnish water according to its contract. It is liable in an action of tort for damages to a taxpayer whose property is destroyed by fire on account of its negligence in not so furnishing water. This ruling was followed in Woodbury v. Tampa Water Works Co. (Fla.), 49 So., 556.

As has been said above, the municipality itself has no cause of action against the water company. Its right of taxation does not create an interest in the property destroyed, but vests in the municipality on an expectation dependent upon contingencies, but that is too remote to found a right of action. (Ferris v. Carson Water Co., 16 Nev., 44; Montgomery v. Montgomery Water Works Co., 79 Ala., 233.)

An insurance company which has paid a loss on a fire policy over property destroyed is only subrogated to the rights of the assured, and its right of recourse against the water company is no greater than his. (Phoenix Ins. Co. v. Trenton Water Co., 42 Mo. App., 119.) It cannot, therefore, recover for such loss under a contract between the city and the water company making the latter liable for damages for inadequate supply of water to extinguish fire.

A statute which merely authorizes cities to contract with water works companies for the operation of water works does not thereby give the cities power to contract with them for the indemnification of taxpayers so as to enable the taxpayers to sue the water works companies for damages sustained by an inadequate supply under the contract. It would undoubtedly be in the power of the Legislature to confer such a power on cities by expressly providing therefore. (Becker v. Keokuk Waterworks, supra.)

Where a water company makes a contract directly with an individual to supply him with a sufficient water pressure for fire this takes the case out of the general rule. The company then becomes liable in damages to the consumer for loss sustained by him through failure of pressure. (New Orleans, etc., R. Co. v. Meridian Water Works Co., 72 Fed., 227; Harris v. Columbia Water & Light Co., 114 Tenn., 328.) In such a case of unconditional contract the liability is the same, although the failure occurs without fault on the part of the water company. (Middlesex Water Co. v. Knappmann Whiting Co., 64 N. J. L., 240.) But to constitute this liability the contract must be for water sufficient for the extinguishment of fire and not merely for such purposes as for use about a brewery. (Beck v. Kittanning Water Co., (Pa.), 11 Atl., 300.) And a landlord cannot take advantage of a contract for a water supply for fire purposes made with his tenant, where the building is destroyed. (Nichol v. Huntington Water Co., 53 W. Va., 348.)

The measure of damages recoverable under such a contract is full indemnity for the loss resulting from breach of the contract, not merely the value of the water which should have been furnished under it. (Harris v. Columbia Water & Light Co., supra.)

ROCHESTER CITY GOVERNMENT*

By a constitutional amendment adopted in 1907, Rochester, N. Y., became a city of the "first class," and on January 1, 1908, a new charter went into effect applying to that city only. The special feature of this charter, as well as of the charter for cities of the second class, is that it sharply divides the city government into two branches, the legislative and the executive.

The legislative branch is composed of the Common Council, the members of which are elected from each of the 22 wards. The President of the Common Council is elected by the city at large. The Council has very large legislative powers, and it is not necessary for the city to ask for special legislation at Albany for any of the ordinary operations of the city government. The Council has power to issue bonds and notes for any improvement which it may authorize, limited only by the constitutional provision that the indebtedness shall not exceed 10 per cent of the assessed valuation. This body has no executive functions. The Mayor has veto power over the ordinances of the Common Council, but the charter contains the usual provision that they be repassed by a two-thirds vote.

The executive branch of the city government is, in theory and in fact, controlled by the Mayor. The Mayor has the appointment, and without confirmation, of the Corporation Counsel and the City Engineer, who, together with the President of the Common Council, the Comptroller and the Mayor, as President, constitute what is known as the "Board of Estimate and Apportionment." This board fixes the number of employees in all departments and bureaus of the city. and also fixes the salaries of all officers and employees, except in a very few cases where the salary is fixed by the charter.

This board also prepares and submits to the Common Council an annual estimate of the expenses of the city for the current year. It also has other extensive powers, some of them in approval of acts of the Common Council.

A second board, called the "Board of Contract and Supply," is composed of the Mayor, the Commissioner of Public Works, appointed by the Mayor, the Corporation Counsel, City Engineer, and the Comptroller, an elective officer. This board has the letting of all contracts for city work, excepting for schools and parks, whenever the work or material costs exceed $250.

This board also approves of requisitions for work for all departments, except, as stated, for amounts less than $250.

The executive business of the city is subdivided into the following departments:

The Department of Public Works—The Commissioner of Public Works is the head of this department, and appoints, to serve during his pleasure, a Superintendent of Public Works, a Superintendent of Streets, a Sealer of Weights and Measures, and the numerous other officers and employees necessary to carry on the department. The Board of Estimate and Apportionment determines the number and pay of employees.

The Department of Public Safety—The Commissioner of Public Safety is the head of this department, which includes the Police Bureau, the Fire Bureau, the Health Bureau, and the Bureau of Buildings. The Commissioner appoints the heads of these bureaus, and has general control of their operations.

The Corporation Counsel, appointed by the Mayor, has the appointment of all of his subordinates, and has charge of all the legal business of the city, and, as before stated, is a member of the Board of Estimate and Apportionment and the Board of Contract and Supply.

The City Engineer, also appointed by the Mayor, has charge of all the engineering for the city, with the exception of parks and schools. He also is a member of the Boards of Estimate and Apportionment and of Contract and Supply, also of the Public Market Commission and of the Examining Board of Plumbers. He has charge of the maintenance of all city buildings, except school buildings and such as are used exclusively for the Department of Public Safety.

The heads of the various departments are appointed by the Mayor at his pleasure, and without confirmation. The Mayor, therefore, has an absolute control over the executive departments.

The Mayor also appoints the Park Commissioners, who serve for a definite term. This Board of Park Commissioners has the supervision of the public parks. He also has the appointment of the Board of Examining Plumbers and of the Market Commissioners, and a number of other minor officers.

Among the other elective officers is a board of four assessors, which has charge of the general assessment of the city and also of special assessments for local improvements, or for other purposes.

The School Board, consisting of five members, is also an elective board, and almost entirely exempt from control by any other branch of the city government, provided it does not ask for an appropriation exceeding $25 per capita of the registered pupils. For an appropriation exceeding that amount it is subject to the approval of the Board of Estimate and Apportionment and the Common Council.

There are also two Municipal Court Judges elected, and one Police Court Judge.

*From paper by Edwin A. Fisher, City Engineer, of Rochester, N. Y., before the New England Water Works Association.

WOOD BLOCK PAVING IN BERLIN

Less than 2 per cent of the street paving in Berlin is of wood blocks, which are made chiefly from Swedish pine, although a small amount of Australian hard wood has been used, and also native pine and beech and American cypress and yellow and pitch pine. The blocks vary in width from 2.75 to 3.94 inches, in length from 7.09 to 11.81 inches and in height from 4.72 and 7.09 inches. Some of the blocks are impregnated with creosote, but a zinc chloride solution is used also. This contains two parts by weight of chloride of zinc and 30 parts of water. The creosote is preferred, as it is thought to better prevent swelling because of moisture.

A combination of the creosote and zinc chloride impregnation is the so-called English system, in which a mixture of crude carbolic acid or creosote and a water solution of zinc chloride is used. Still another method employed in Germany consists of immersing the paving blocks in large tanks containing a mixture of gas tar and heavy oil and allowing them to remain until thoroughly saturated, which requires from a few minutes to three-quarters of an hour. This system is not considered so efficient as the English method, however, because the oil has not an opportunity to penetrate as deeply into the blocks.

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Regulation of Air Craft

LESS than seven years ago the first actual flight of a heavier-than-air machine took place. Last month an aeroplane landed in a built-up city street and mounted into the air again without outside assistance. And on the 30th a flight by aeroplane was made over a considerable part of the city of Brooklyn. No "planes" have shown themselves to be more reliable than those of the Wright brothers; but these cautious adepts refused to allow any of their assistants to attempt this flight because of the danger not only to themselves but also to those in the streets below.

The list of those killed by automobiles in this country is numbered by scores every week, and we have not yet arrived at adequate laws and methods for controlling reckless chauffeurs. This new danger is now added, and who can say that a year or two will not see the aeroplane a more or less common vehicle of pleasure? It therefore behooves the lawmakers of city and State to consider how these may be controlled—both the form of law and the method of enforcement. Licensing, the exposing of numbers at least five feet high on the under side of a lower plane, forbidding alighting on any street or public place, etc., occur at once as essential. But should not the danger from falling objects, such as wrenches, to say nothing of the aeroplanes themselves, or their occupants, make it advisable to prevent air craft from flying at all over cities or villages?

And if such ordinances are passed, how are they to be enforced? It would seem as though a corps of air police would be necessary for this purpose; also the furnishing to ordinary police of field glasses for learning the identity of air craft.

Again, what rights has a city to control the use of the air above its area? and what rights have private owners in the same? These questions the lawyers will have called to their attention.

The above is not written in an attempt at facetiousness, but in belief that the questions asked and problems suggested will be demanding answers and solutions fully as soon as they can be arrived at, even if they be taken in hand at once.

Non-Citizen Municipal Officials

SOME months ago interest was aroused by an advertisement which appeared in the papers of Germany for a Mayor for a large city of that country, this apparently showing that the aim was to obtain the man best fitted for the position, regardless not only of personal popularity or political "pull," but even of citizenship. In other words, the city wished to obtain the man who could best manage its business, not to confer an honor or a benefit.

It will probably be some time before any American city will select a non-citizen for Mayor; but a number have filled some of the technical positions in this way. The question is, Which is more important, that honor and emolument be given to a citizen or that the business of all the citizens be conducted most efficiently and economically? If a private electric light company should choose a drug clerk as manager and a telephone operator as superintendent of the plant, because both were stockholders, the enterprise might prove a success, but the chances would be against it. A city, however, will place in charge of its streets or sewers a "practical man" or at best an engineer whose sole experience has been on railroad work, because its citizens include no engineer who has had paving or sewerage experience; or will place in charge of its complicated accounting system one with little or no experience in even ordinary bookkeeping. This practice and the short and uncertain tenure of office are two of the most important causes of inefficiency in the conduct of public work—and inefficiency is vastly more common in the conduct of municipal affairs than is dishonesty.

There are, fortunately, exceptions to the above, and cities are coming more and more to fill positions, especially the technical ones, from non-citizens. But hard feelings are generally created thereby and the outsider has an unpleasant time of it. In a city near New York the Street Commissioner, a non-citizen appointed because of special fitness for the position, has served in this capacity for three years, in spite of constant opposition and unjust criticism from the friends of local candidates for the position, but has concluded that it is no longer worth while to undergo the annoyance and has resigned. A year ago a citizens' association in one of our largest cities requested a number of outside specialists to take a civil service examination for a technical position in that city, even offering to pay their traveling expenses from distant cities. Several did so, but at once pressure of all kinds was brought to bear upon those who passed the examination successfully, intimations were given them of how uncomfortable their position would be

made, and even an injunction was obtained against giving the position to outside parties (which has recently been dissolved, we believe), and no non-citizen received, nor we believe would any of them now accept, the position. Possibly in this case there was not any necessity for going outside of the department for a perfectly competent man, but the same tactics would probably have been employed by the politicians had such necessity existed.

Within a few days another case has occurred in New York City. Prof. Edward W. Bemis had made a record as head of the Water Supply Department of Cleveland, Ohio, which caused his ability and success to be generally recognized by all water works men. At the request of a number of citizens' organizations he was, in December last, appointed First Deputy of the Department of Water, Gas and Electricity, mainly with a view to reducing the water waste in this city along the lines of the methods employed by him in Cleveland. The Board of Estimate and Apportionment endorsed this idea by appropriating $300,000 for his use and he had just begun to show how effective his work was to be when he was ordered to resign by the Commissioner (his immediate superior), refused to do so, and was removed and replaced by a local man with no experience in such a position. The Commissioner, a wealthy contractor and real estate dealer, gave reasons for this which were in part distorted facts and in part wholly false; and the citizens will continue to lose hundreds of thousands of dollars' worth of water a year from leaky joints and defective fixtures and that stolen through surreptitious connections, because, some say, of politics; some, of jealousy of an outsider.

These are only a few of many similar incidents, but the two last named stand out in special prominence because of the well known and favorable reputation of the parties unpleasantly involved in them. Every city of any size nowadays needs the best of technical talent for carrying on its engineering and financial functions. As in the case of other classes of work, the various branches of municipal work are being specialized; and it no longer holds true, as it might have done some years back, that any civil engineer is perfectly competent to take charge of a city's water works, sewerage or paving. As a department develops it will generally be possible, of course, to bring up in that department assistants who can, from time to time, be promoted to the higher positions; and such promotion is desirable if based upon merit, as it encourages the younger men to deserve such promotion through efficient service to the city. There will, however, come a time in most cities when a new enterprise is started calling for a new class of technical employees, or when some unusually important demand calls for a specialist along certain lines, when it may be advisable to obtain the services of one having considerable experience along these lines and who has necessarily obtained this experience in other cities and then a knowledge of the chances taken will make it difficult for cities to obtain such experts when they are needed.

It will probably be some time before the New York Water Department or any of the other cities referred to will be able to persuade men of national reputation as experts in municipal affairs to accept salaried positions with them and, giving up all other business, place themselves at the mercy of commissioners or other city officials whose ignorance of the matters which they have in charge is even greater than the knowledge of them possessed by those whom they treat so cavalierly. Professor Bemis will not have to look long for another opportunity to use his talents, nor will any of the other gentlemen referred to lose much, if anything, by not obtaining or retaining the positions in question; but the citizens of these cities are losing a great deal by being deprived of their able services and through the acts of these many other cities may suffer simply because of the discouraging of men of the highest talents from taking municipal positions. Not only municipal ownership, but municipal government in its most elementary forms, will never outgrow the stigma which is now placed upon it until it chooses its officials and servants for efficiency and not as a matter of favor to them or their friends.

PIPE SUBWAYS

In England and on the Continent—Lengths and Sizes in Each City—Pipes and Conduits Contained—Cost of Construction—Advantages and Disadvantages

In May of this year the Board of Estimate and Apportionment of New York City authorized its Chief Engineer, Mr. Nelson P. Lewis, to attend the Brussels Road Congress and at the same time to obtain information in European cities concerning pipe subways. Mr. Lewis found that in Great Britain only four cities had attempted the construction of pipe subways, namely, London, Nottingham, St. Helen's and Glasgow. On the Continent Mr. Lewis visited and obtained data concerning subways at Milan and Paris. Berlin, Brussels, Cologne, Dresden, Munich, Zurich also were visited and conditions as to underground construction noted, although these cities possess no subways.

From his investigation conducted in these cities he drew the following conclusions which he embodied in a report presented to the Board of Estimate and Apportionment on October 7:

Conclusions

(1) No city has what might be called a "system" of subways for pipes and conduits, unless the sewers of Paris might be so called.

(2) No city appears to have considered the systematic building of pipe subways in existing streets for the reason that the expense is considered prohibitive.

(3) With one unimportant exception, no city has attempted to build such subways unless in connection with the creation of new or the widening of existing streets.

(4) In London, where the first pipe subway was built in 1861, only 8⅓ miles have been constructed in forty-nine years, and the total length in all Great Britain, outside of London, is about one mile.

(5) With the exception of London, the cities having subways own and operate the public utilities, so that no direct revenue is derived from them in the way of rental.

(6) Where gas pipes have been placed in subways there is no evidence of leakage, and the municipal authorities regard this practice as safe. One fire has recently occurred in a subway, but there was no explosion, and it was not attended by serious damage.

(7) The subways having been built in new streets, all of the pipes were new, and consequently there has been less danger of leakage than if old pipes had been placed in them.

(8) In a number of cases where subways have been built it is positively stated that the pavement has not been disturbed since it was laid, and in the case of one stone pavement that no repairs whatever have been required in twenty-five years.

(9) The cities most conspicuous for cleanliness and admirable pavements are not those which have pipe subways, and it is evident that these conditions are simply due to efficient administration and the co-operation of the different branches of the city government.

The special reason for requesting Mr. Lewis to make this examination and report was that it might assist in reaching a decision concerning the advisability of building pipe subways in connection with the proposed Broadway-Lexington avenue rapid transit line, a committee having been appointed by the board to consider this.

In the beginning of his report Mr. Lewis calls attention to the fact that conditions in most of the European cities differ somewhat from those found in American cities. "The problem of placing the various pipes, mains and conduits in subways built for their accommodation is much simplified in most European cities by reason of the fact that the various public utilities, such as water, gas, electric lighting, telegraph and telephone, and even street railways, are quite generally owned and operated by the municipality or the State. While no direct revenue in the way of rental is received for the occupation of the subways, attempts of the city authorities to place pipes and conduits in them are not resisted by corporations which may be desirous of avoiding the expense of removing their structures to the new position or of rental for space occupied, instead of the continued use of the ground beneath the pavements without compensation." These cities, however, would receive other benefits in the same manner as would American cities, these

including the avoidance of the cost of opening and restoring pavements at the city's expense, the increased life of the pavements through the absence of such mutilation, and the avoidance of the public inconvenience caused by such openings. London is the only European city having pipe subways which derives a direct money return in the way of rentals, and even here the charges seem to Mr. Lewis to be quite inadequate.

In the four English cities named the conduits in nearly all cases occupy the central part of the roadway, although in several instances they have been placed on both sides of the street, this being the case in the new Kingsway, London, where the space beneath the central part of the roadway is occupied by a street railway line; and in the case of the Victoria embankment, where an underground railway occupies the central position. In all the cities, not only in England but on the Continent as well, with the exception of one short block in Glasgow, such subways as exist have been built as part of the construction of a new street, in consequence of which there were no old pipes to be cared for during construction or to be moved to the new position provided for them.

The cost of building the subways in England was much smaller than the estimates made or bids received for constructing such subways in New York, the cost in London having varied from $17 to $40 per linear foot, in Nottingham having been $17 a foot, in St. Helen's $12 and in Glasgow about $18. The cost of subways in Manhattan is not stated in the report. In Paris the subways referred to are the large sewers, which themselves serve as subways, no special chambers or ducts being provided for that purpose. The engineers of the Public Service Commission of New York estimated the cost of building pipe galleries in connection with the rapid transit railway construction at from $300,000 to $800,000 a mile, depending upon their position with respect to the railroad subway, this being equivalent to from about $56 to about $150 per linear foot. In the case of the Fourth avenue subway, now under construction, the bids and contracts for three sections include pipe subways for the entire length, and the prices per linear foot were $40.42, $52.53 and $57.62, respectively, for the three sections. The much lower price in the first named section is due to the fact that this section is in a new street where there are no existing pipes or conduits to be cared for or to be removed from their present position to the proposed subway. The other prices given are believed to include the cost of the removal and relaying of all pipes and conduits now existing into the new subways, which must form a very considerable part of the expense. Also the price includes really two subways, one on each side of the street, each 8 feet wide and 6 feet high, thus giving a total area of 90 square feet. In London the ordinary subway is 12 feet wide and 7½ feet high, giving an area of about 74½ feet.

Subways of this kind were, it is believed, first built in London, this being in connection with the laying out and construction of a new thoroughfare known as Garrick Street in 1860-61. The Metropolitan Board offered six prizes for some plan "for obviating the expense and inconvenience attending the breaking up of the pavement for the repair of pipes, mains, sewers and other underground work," this to include also design for the surface of the street and for sub-sidewalk vaults. The subway constructed was 7½ feet high by 12 feet wide with an arched roof, in addition to which 14 arched side passages were constructed for house service pipes, together with vaults along each side of the street. Other streets opened up in 1864, 1868, 1870 and 1876, and certain other subsequent improvements have included pipe subways as part of the original construction.

Certain of the subways of London are under the control of the London County Council and part under that of the City Corporation. Those of the County Council occupy sixteen separate streets, in three of which there are two subways, one on each side of the street. These are of four different sizes, namely, 9 feet wide by 7½ high, 12 feet wide by 6 feet 9 inches high, 12 feet by 7 feet high, and 12 feet wide by 7½ feet high. The rental charged for the use of these subways increases with the diameter of the pipe, and an additional charge is made for valves, junction boxes and other appurtenances of $2.50 per cubic foot or part of a foot occupied beyond the limits of the pipe. The subways under the control of the Corporation of the city of London occupy fifteen separate streets, but are shorter in length than those of the County Council's subways. There are more variations in size, however, these being 4 feet wide by 8 feet high, 4 feet by 9 feet, 4 feet 3 inches by 9 feet, 7 feet by 11 feet 6 inches and 12 feet by 7 feet 6 inches. In these several London subways are carried water mains, gas mains, hydraulic power pipes, pneumatic tubes and electrical conduits. Of water mains, varying in diameter from 14 inches to 3 inches, there are 10,194 feet. Of gas mains, varying from 24 to 4 inches in diameter, there are 12,639 feet. Of hydraulic power pipes, varying from 6 inches to 3 inches in diameter, there are 5,049 feet. Of pneumatic tubes of 4 inches and 3 inches diameter there are 9,339 feet. Of electrical conduits there are 34,416 feet, varying from small single cables to 6 x 36 boxes, and including 168 feet of conduits in trenches beneath the bottoms of the subways. Some of the older subways are so crowded with pipes and conduits that there is no room for any more; but in most of them there is ample room for additional pipes.

Mr. Lewis calls attention to the fact that, although London began building subways in about 1861, the total length constructed to date amounts to only 8.345 miles. In explanation of this limited mileage he was informed that it was only when a new street was created or an old street widened or straightened that any attempt is made to build a pipe subway, and that the expense of constructing them in existing streets simply for accommodation of underground structures would be so great as to be out of proportion to the benefits to be derived.

A comparison is made in this report between the amount of actual area occupied by pipes and conduits in the London subways and that which would be required by similar structures at present existing under some of New York's streets.

The subway under Holborn Circus contains three pipes, varying from 6 inches to 14 inches in diameter, and four rectangular conduits, the smallest of which is 8 inches square and the largest 12 by 18 inches; the total sectional area being 5.59 ft.

In Monument street the subway contains seven pipes, varying from 3 inches to 18 inches in diameter, and two conduits, one 4 in. by 4 in. and the other 2½ by 8 in., the total sectional area being 3.1 sq. ft.

In the conduit under Shoe lane there are seven pipes from 4 in. to 18 in. in diameter, and six conduits ranging from 5 by 10 in. to 24 in. square, the total sectional area being 9.83 ft.

In Broadway, New York, between Walker and Lispenard streets, there are five gas pipes ranging from 6 to 20 inches in diameter, three water pipes from 12 to 30 inches in diameter, two Edison tubes and six banks of electric subways containing from 4 to 48 ducts; the total sectional area being 45.32 sq. ft.

In Broadway, between Eighth street and Ninth street, there are six gas pipes from 6 to 12 inches in diameter, three water pipes from 12 to 36 inches in diameter, two Edison ducts and 5 electric conduits containing from 3 to 48 ducts; the total sectional area being 42.78 sq. ft.

In Canal street, east of Mulberry street, it is found that there are six gas pipes from 4 to 16 inches in diameter, two water pipes, one 12 and one 16 inches, one Edison tube and four electric subways containing from 4 to 48 ducts; the total sectional area being 28.88 sq. ft.

In Canal street, between Green and Wooster streets, there are six gas pipes varying from 4 to 12 inches in diameter, four water pipes ranging from 12 to 20 inches, 2 Post Office tubes each 8 inches, one 6-inch compressed air tube, three Edison tubes and five banks of electrical ducts; with a total sectional area of 42.53 feet.

Along Lexington avenue the underground structures are much less numerous. Between Twenty-third and Twenty-fourth streets there are five gas pipes from 6 to 12 inches in diameter, two 6-inch water pipes, one Edison tube and one bank of electrical ducts; with a total sectional area of 12.94 feet.

In Lexington avenue between Seventy-eighth and Seventy-ninth streets there are four gas pipes varying from 6 to 12 inches in diameter, one 12-inch water pipe, one 8-inch air pipe, one Edison tube, and two banks of electrical ducts; with a total sectional area of 17.85 feet.

It will be seen that the average sectional area of the underground structures at the two points on Broadway is more than seven times as great as the average area of the pipes and conduits in Holborn circus, Monument street and Shoe lane. The average for the two sections of Canal street shows that the structures to be provided for have 5¾ times and those in Lex-

ington avenue 2½ times the area of those accommodated in the subways under three of the busy streets of the city of London.

A number of the pipes in the New York streets are unnecessary, the duplication having been caused in several cases by the existence of a number of independent companies, each with its own main. As most of these companies have now consolidated, the number of pipes in a new street would be greatly reduced. However, with a per capita water consumption far exceeding European cities, with the increasing use of gas for cooking and heating, and with the general use of electricity and telephones, the underground structures to be accommodated will in any event exceed in size and number those found in London streets.

The subways in Nottingham were built some time ago, the first having been in 1861-'62, with additions in 1886 and again in 1892. The total length of street occupied by subways does not exceed one-half mile. The latest work was undertaken in connection with the condemnation by the city of an unsanitary area and the construction through it of a new street. In the Nottingham subways the sewer is placed beneath the center of the subway, which is 10 feet in width and 8 feet 6 inches in height. In this latest subway ventilators with open gratings are placed 148 feet apart, through which the subway is ventilated and enough light is admitted to permit a thorough, satisfactory inspection without artificial light. In this connection it may be said that Mr. Lewis found the air in all of the London subways to be excellent, no odor of gas being detected; in fact, the municipal authorities in London do not hesitate to include gas mains and electrical conductors in the subways with other pipes; in one instance a line of electrical conduits carrying 11,000 volts being placed immediately over and a few inches from a large gas main.

The cost of the Nottingham subways, including side entrance but not including the sewer, was about $17 per linear foot.

Mr. Arthur Brown, M. Inst. C. E., the Borough Engineer, in a paper before the Incorporated Association of Municipal and County Engineers in April, 1892, said:

To show the value of such works in the street called Victoria street, in which is situated the general post office, there are, besides the gas and water pipes and connections, no less than six pipes containing telegraph wires in this subway, and not one single stone was disturbed in this carriageway for twenty-five years, and in that period not one single penny was spent in repairs on this street.

However, he does not urge that Town Councils

should incur immediately a large expenditure of money in laying down subways in all existing streets, which would be impossible from its cost, but that in the case of new main streets and where main thoroughfares are improved and widened the opportunity should be seized to lay down subways in order to minimize as much as possible the evils resulting from the continuous taking up and relaying of streets.

St. Helen's has a population of about 95,000. In 1899 it purchased the street railway system and in connection with rebuilding the same the construction of a main sewer and the removal of certain water and gas mains, the Council decided to construct a pipe subway at the same time. This subway is 6 feet 6 inches in height and 5 feet 6 inches in width and has a total length of 2,040 feet. It is constructed entirely of concrete with the exception of one ring of brick on the inner side of the arch, and the upper part of this concrete forms the foundation for the street pavement. Six-inch earthenware pipes run from this beyond the curb at frequent intervals, and in these the gas and water service pipes are placed. It is ventilated by open gratings about 100 feet apart and is lighted by electricity. At present it contains one 18-inch gas main, a 10-inch and a 6-inch water main, and telegraph and other electrical conductors. The cost of the work complete, including the lateral connections and the electric lighting, was less than $12 per linear foot. It is believed that the paving above this subway has not been disturbed during the eleven years since it was built. However, the Borough Engineer, Mr. George J. C. Broom, states that there is no present likelihood of the construction of any more subways, unless under similar conditions in connection with other street construction work. In June of this year a fire occurred in the subway, resulting in damage to the insulation of the electric cables and the melting of a lead connection with the gas pipe. Fortunately, there was no explosion and the damage was insignificant. A member of the fire department, however, stated that he believed a catastrophy had been narrowly escaped.

In Glasgow a pipe subway 345 feet long was built in 1905. This is 6½ feet wide and 7 feet high, has 73 cross connections consisting of 12-inch fire clay pipe laid to the curb, and cost complete, including connections for the service pipes and electric lighting, something less than $18 a linear foot. This was not built in connection with any street reconstruction. There is apparently no present intention of constructing any additional subways in this city.

The only Continental city in western Europe which has a subway for the express accommodation of pipes and conduits is Milan, where, in the Via Dante, such a subway has been built for a short distance. Along this street there are subways on each side 6 feet high by 4 or 5 feet wide. These adjoin the front foundation walls of the buildings and make it easy to inspect and repair the drainage pipes which connect the houses with the sewers. Within these subways are placed the water pipe, gas pipe, electric wires, etc., and passages extend from them to the main sewers. Mr. Lewis doubts whether the size of this subway is sufficient to permit the convenient handling and inspection of pipes.

Of the sewers at Paris it is not necessary to speak at length, as every one interested in the subject is familiar with the enormous size of these old sewers, and the fact that water and gas mains, electric wires and the like are suspended from the walls of these large sewers, well above any level ever reached by anything but the most excessive floods.

Mr. Lewis adds to his description the following comment:

The statement of the engineers of Nottingham and St. Helen's that not a paving stone has been disturbed in Victoria street, in the former city, in twenty-five years, and in Ormskirk and Church streets, in the latter, for over eleven years, or since pipe subways were built in these streets, is impressive. It is difficult to place a money value upon this immunity from the disturbance of pavements, and as the various pipes are owned and operated by these cities, the amount saved in expense of pavement openings and restorations must be very great. In New York this expense is commonly paid by the public service corporations and the plumbers making the openings, although it must inevitably come out of the pocket of the citizen, and while the total annual cost must be very large, it does not appear in the city's running expenses, but the public inconvenience and business loss caused by frequent openings must be enormous, while the decreased life of pavements and the increased cost of maintenance undoubtedly amount to a large sum every year. The general building of subways to remedy this trouble, however, would involve a cure which might be more expensive than the evil, unless the subways were practically self-supporting through rentals derived from those using them.

WOOD STAVE PIPE

IN connection with the enlargement of its water supply system, the city of Fort William, Canada, made use of a small lake, from which water was brought in approximately 10,000 feet of 18-inch sectional wood stave pipe which was under a maximum head of 300 feet, the spacing between the wiring of the pipes being decreased as the head increased. The pipe was purchased from a company located in Vancouver, which shipped the pipe on flat cars, the journey occupying from three to five weeks. During this time the pipe passed through a variety of climates, totally unprotected from climatic conditions and exposure to weather of all kinds. When it was filled and put into service it was found to leak at a great number of points, which leaks were no sooner repaired than others appeared, and altogether 3,000 leaks were stopped. The City Engineer, Mr. H. S. Hancock, believed that the leaking was due to the change from the humid coast atmosphere at the point of manufacture to the comparatively dry climate east of the Rockies, he having found that west of the divide such pipe was always satisfactory, while in the Canadian prairie provinces exactly the contrary has been the experience.

EXPOSED SEWERS AT LEAVENWORTH

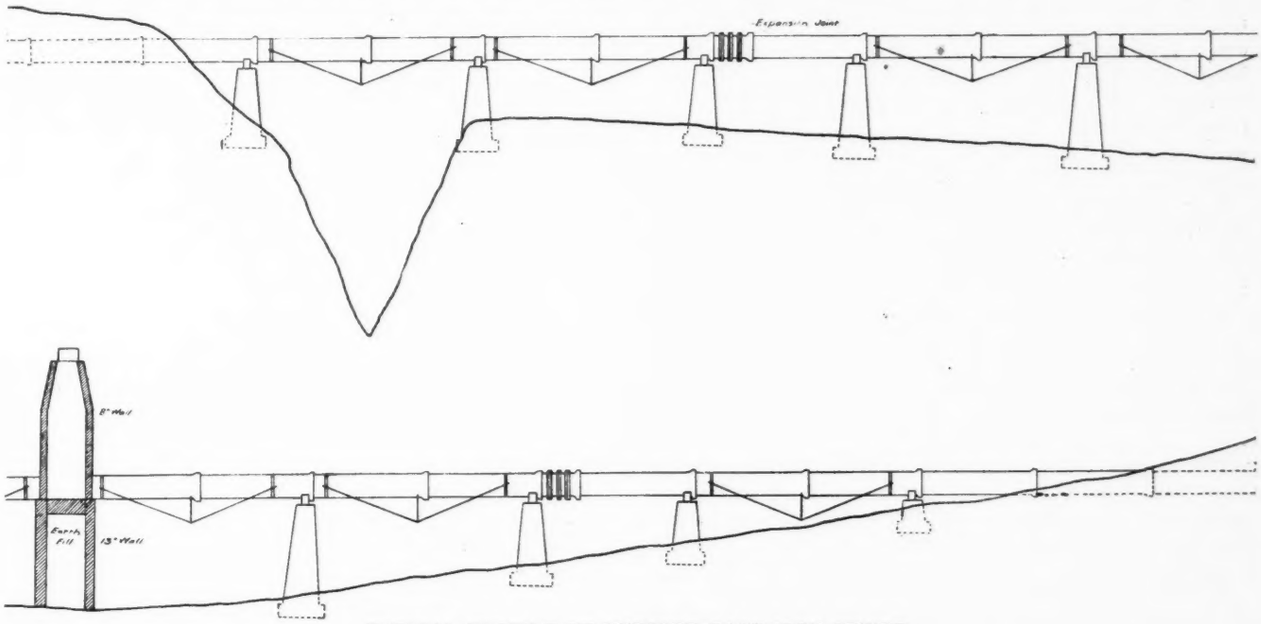
Depressions in Surface Crossed by Sewers Supported on Piers—Cast-Iron Pipe and Tie Rods for Trusses —Provision for Expansion—Cost of Work.

By JOSEPH O'NEIL, City Engineer
Paper before American Society of Municipal Improvements

IN designing main trunk and lateral sewers for Sanitary Sewer District No. 9, at Leavenworth, Kansas, the latitude of the design was limited by a great many natural conditions. The district consists of several minor drainage areas and contains numerous creeks and "draws," making the topography of the district very rough and broken. At points where creeks cross alleys and streets are located culverts and bridges, the crossing of which controlled the grades of the sewers almost absolutely. In addition to this, the several additions to the city comprising the district were poorly platted when originally laid out, and the arrangement of streets and alleys is bad. In some cases there are two and three alleys in one block, platted as "T" and "H" alleys; in other cases there are no alleys and it was necessary to condemn right-of-way for sewers. In order to lay out the main trunk sewer so as to provide for lateral sewers in each block, the alignment was controlled entirely by these requirements, and the topography had to be disregarded for the most part.

Being thus controlled in grade and alignment, the depth varied from very shallow to exceedingly deep work, sometimes through twelve to fifteen feet of rock. In crossing creeks and ravines, it was often necessary to have the sewer above ground. These "exposed" sewers will be discussed in this paper.

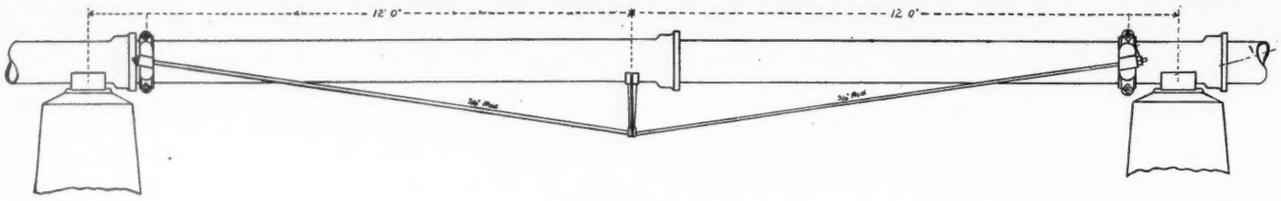
It was deemed best to use light weight, bell and spigot cast-iron pipe supported on concrete piers, and to provide for the free expansion of the pipe. To attain this end, it was provided that the piers be mounted with cast-iron pier plates anchored into the concrete; on these plates were to be placed several lengths of round bar iron at right angles to the line of the sewer to serve as rollers and fitting over the top of the plate and rollers in such a manner as to secure the rollers from falling out, but at the same time to permit them to roll on the plate with the expansion and contraction of the pipe, a saddle to fit the outside diameter of the pipe.



TYPICAL PROFILE OF EXPOSED CAST IRON SEWER

To avoid placing piers in creek channels where they would obstruct the flow, it was necessary to get a wider panel than 12 feet, and a truss was designed to support the intermediate joint. The truss consists of clamp bands to fit the circumference of the pipe and hold the truss rods in place, a queen post and a set of rods as shown on the details. In estimating

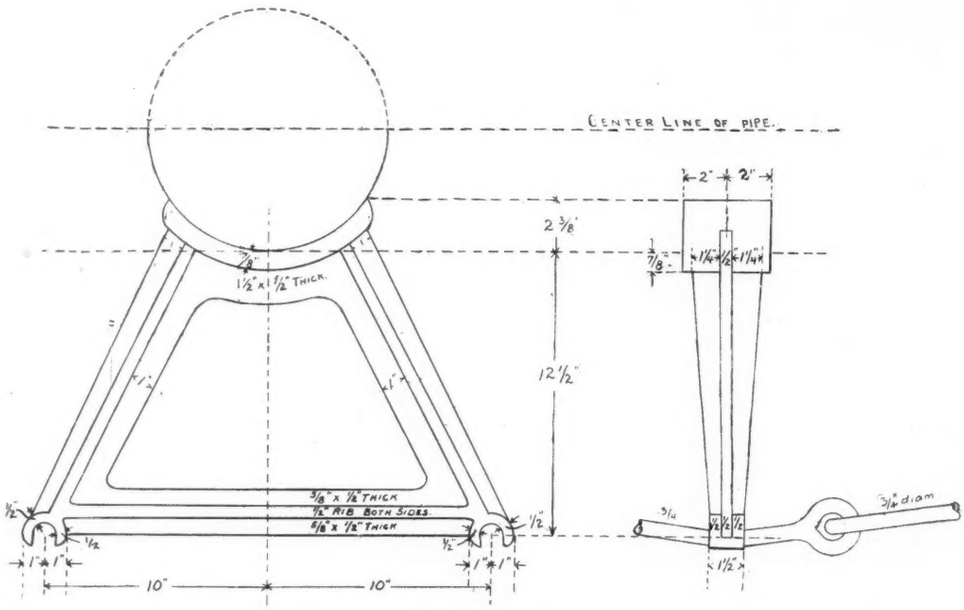
EXPOSED SEWER AND DROP MANHOLE, LEAVENWORTH, KANS.



ASSEMBLED TRUSS

the cost of the work, it was found that the complete truss was less expensive than the pier with its necessary castings, so it was decided to make the panels 24 feet instead of 12 feet, and to use a truss between each set of piers. To provide further for expansion, it was decided in cases where there was more than 75 feet of exposed pipe in a span to place an expansion joint. The regular type of iron body, brass sleeve expansion joint was specified.

While the expansion in an iron pipe with a flow of sewage would be very small, owing to the almost constant temperature of the sewage, and might be taken care of by the "giving" of the lead in the joints, at the same time the loosening of the lead from expansion and contraction would cause leaks that would require attention later on, and it was considered necessary to install expansion joints.



QUEEN POST

In designing the special castings required for this work, every effort was made to have them simple, yet strong. To provide for different sizes of pipe, bushings were used where possible, or one casting only of a set was altered. This reduced the number of patterns required for the castings and kept the castings standard as far as possible. The castings required for the work were made by local foundries.

The unit contract prices for this class of work were as follows:

10-inch light weight cast-iron pipe, in place	$1.50	per ft.
8-inch " " " " " " " "	1.00	"
Trusses for 10-inch pipe complete and in place	16.50	each
" " 8-inch " " " " "	18.00	"
10-inch expansion joints complete and in place at	55.00	"
8-inch " " " " " "	45.00	"
Concrete piers 5-feet high or under, fully equipped with castings	22.00	"
Additional height of piers, per vertical foot	3.00	

The accompanying photograph shows a section of exposed sewer and a drop manhole entirely above ground, a complication arising from the conditions before mentioned.

PAVING AND SEWER ASSESSMENTS IN ROCHESTER

IN Rochester, N. Y., pavements, sewers and other similar improvements are constructed under what is known as "local improvement ordinances." These ordinances provide, generally, that the entire cost of the work should be assessed, in the case of a pavement, upon the abutting property; and, in the case of a sewer, upon the drainage territory. This method of paying for such work is exactly the opposite to the practice in many New England cities, where the entire cost of such work is defrayed from the general fund.

This method in many cases imposes a hardship on the abutting property, but has resulted in increasing very largely the amount of improved streets over what there would have been had the opposite practice been followed. Out of probably 150 ordinances for such work adopted each year for several years past, scarcely any protest has been made to the city officials by the property owners.

PIPE SUBWAYS FOR BALTIMORE

IN laying the steel mains for the new high pressure fire protection system at Baltimore, Md., so much trouble has been occasioned by the pipes and other existing underground structures that in one stretch of 1,800 feet of Baltimore street it is proposed to tunnel under these obstructions for laying the new mains. Chief Engineer Daniel D. Banks estimates that the cost of laying in open cut has been increased $15,000 to $20,000 a mile by the difficulty offered by these structures; and that it would be economical, in districts where this underground congestion exists, to construct a concrete pipe gallery or subway 20 feet wide and 8 feet deep, to accommodate all the underground mains and conduits. Mr. Banks said:

"The cost of such an undertaking as this one would be about $400,000 a mile. The interest on this amount would be $16,000. I am willing to venture a good wager that the saving such a subway would bring to the city would more than pay this interest. So great are the underground obstructions in the business district to-day that every time an accident occurs, however insignificant, with one of the city's pipes or conduits the cost of repairing the trouble is enormous. The excavation alone amounts to about $1 a foot.

"The subway I propose would contain all of the water mains, electrical subway lines, telephone lines, gas mains and all other underground lines except, of course, the sanitary sewers, which should go by themselves. Annual rentals could be charged the corporations using the subway. This subway would be large enough for a gang of workmen to enter through manholes and work at ease. When a break occurred in any of the mains or lines laid in the subway no excavations would be necessary. For that reason the repair work of the city departments would be reduced enormously and the maintenance of street paving reduced to a minimum. The Water Depratment, for example, by having such easy access to its mains could keep them painted and safe from corrosion. Altogether, it would be an investment well worth consideration by the city."

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

ROADS AND PAVEMENTS

Brick for Heavy Traffic Roads in Erie County

Buffalo, N. Y.—Erie County is the most important in the State in the matter of road maintenance, according to H. K. Bishop, First Deputy Highway Commissioner. Westchester County with its roads leading into New York is the next, but it does not concern the Commission so much because the city takes care of the main roads. Erie County has nearly 200 miles of State roads, a considerable portion of which have been paved with brick. Mr. Bishop considers that brick paving is peculiarly adapted to the roads about Buffalo because of the heavy traffic. While the initial cost is greater than macadam or asphalt macadam, Mr. Bishop believes it will be economical in the long run. Macadam roads, he explains, will stand up well under light usage, but it is another proposition where heavy wagon and automobile traffic is concerned. The automobiles alone would not wear macadam greatly, in fact by applying an oil coating they tend to pack the road, but when the wheels of wagons and the calks of horses' shoes loosen the covering the auto traffic tends to whip off the surface.

Trained Horses Save Cost of Drivers

Chicago, Ill.—Horses marching sedately and without the direction of a driver from one end of a block to the other, receiving a load of concrete at one end, turning without an order and drawing the load to the other end of the block, where it was needed for street-repairing work, kept a crowd constantly on the watch in Ridgway Avenue near West Twenty-sixth Street recently. The street was being repaved at that point and a half dozen of these "self-driven" horses were at work for several days. They were grey old codgers, most of them, and their intelligence was the result of many years of work. In the middle of the street, half way between the point where the dumping carts were loaded and where the paving was going on, stood a man who kept the line going up one side and down the other.

Twenty Millions for Texas Roads Next Year

Fort Worth, Tex.—The Texas Commercial Secretaries' Association recently sent out inquiries to commercial clubs throughout the State asking for an estimate of money to be expended on improvements to public highways during the year 1911. Replies indicate there will be approximately $20,000,000 of bonds issued for building and improving public highways during the coming year. The next session of the State Legislature in January will be asked to appoint a commissioner to supervise the expenditure.

Railroad Educating Farmers in Road Building

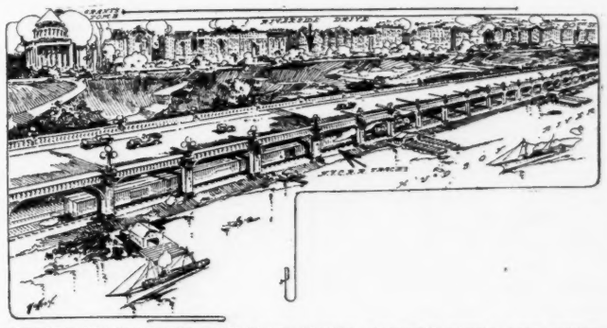
Harrisburg, Pa.—Believing that good country roads are a factor in the problem of transportation by rail, the Pennsylvania Railroad Company has inaugurated an educational campaign for the improvement of roads with special instructions as to the methods to be employed for making the ordinary dirt road of the country a good road at very little cost. Interest on the part of railroads in good roads arises from the fact that the great bulk of its miscellaneous freight comes to it for transportation when the roads are dry and hard. The equipment in this scheme of road building is the split-log drag, so built that the dirt from the side of the road is gradually moved to the center as the drag is pulled over the thoroughfare. In constructing the drag some little ingenuity is required in order that it may do the thing required of it. D. Ward King, an expert in the construction of these devices, has gone into the counties of Pennsylvania to show the farmers how these implements should be constructed. In making good roads Mr. King cautions against the attempt to make the road perfect in a day, or even a month. Any attempt of this kind is sure to spoil the whole task. He advocates the rounding up of the road little by little, each addition to the surface being given ample opportunity to become compact.

Superintendent Issues Pamphlet on Street Construction

Milwaukee, Wis.—Superintendent Mullen has decided to issue a pamphlet on street construction for the use of property owners. He has classified the various kinds of pavements and the cost at which the city could lay them. The cost for each per square yard follows: Sandstone, $3; granite, $2.80; creosoted wood, $2.20; bitulithic tar macadam, $2.20; brick, $1.95; standard asphalt, $1.60; Milwaukee pavement, $1.30; tar macadam, $1.20; straight macadam, 80 cents, and penetration macadam, 65 cents.

To Extend Park Over Railroad Tracks

New York, N. Y.—Residents of Riverside Drive are making protests against the noises and odors in their section of the city, to which the New York Central Railroad is the principal contributor, with automobiles playing a secondary part. Coincidentally with this protest it is announced that Dock Commissioner Calvin Tomkins and Park Commissioner Charles B. Stover will soon submit combined plans for dealing with the situation to the Board of Estimate and Apportionment. The plan is to roof over the railroad extending the natural slope of the park, adding 30 acres to its area. A driveway and walk would be built along the margin. The railroad would not be cut off from the water front and would be allowed to fill in land for additional tracks in return for privileges which it gives up.



PROPOSED VIADUCT FOR RAILROAD ALONG HUDSON RIVER AND RIVERSIDE DRIVE, NEW YORK CITY

J. I. Case Company Offers to Build Road

Somers, Wis.—The J. I. Case Threshing Machine Company, through its vice-president, Frederick Robinson, has offered to build a road through the town of Somers to the limits of the city of Kenosha. Previous to this the company had offered to build a road in the town of Mt. Pleasant and the offer was accepted. This will make an improved road from Racine to Kenosha. The offer is to supply a ten-ton road roller, engine, scrapers, etc., and a full complement of men to operate them effectually. The only condition is that the towns deliver and spread the gravel. The offer was made for the purpose of creating an object lesson in the practical methods of modern road building.

Tacoma Winding Up Contracts for Winter

Tacoma, Wash.—Commissioner Owen Woods, of the Department of Public Works, intends to have few uncompleted contracts left for the winter months this year. For the past six weeks he has been gradually reducing the amount of street and other improvement work under way, so that a major share of it will be completed before wet weather sets in. This has been the request of property owners for years, as scores of streets have remained impassable for months at a time on account of contracts begun late in the fall and abandoned shortly afterward on account of bad weather. A report submitted by Commisioner Woods shows that on October 1 outstanding contracts were about $300,000 less than those on September 1, amounting in all to $592,154.45. During the month contracts in the sum of $28,805 were awarded.

SEWERAGE AND SANITATION

Doubts Presence of Germs

Indianapolis, Ind.—Dr. C. S. Woods, City Sanitarian, does not believe there is any reason to discontinue rummage sales in Indianapolis because of the possibility of the spread of disease germs. In Logansport, Ind., the Board of Health stopped two rummage sales during last week because it was believed there were germs in some of the garments. Under the ordinances in Indianapolis all places where contagious diseases have been reported are thoroughly fumigated, and for that reason health authorities believe there is little danger of the spread of disease through rummage sales. "The Salvation Army and other organizations receiving cast-off clothing are pretty careful their garments are free from germs before they are distributed," said Dr. Woods.

Typhoid Victim Sues City for Damages

Rochester, N. Y.—Alleging negligence on the part of the city "through its officers and employees in allowing or causing water from the Genesee River to flow into the Hemlock water mains at Brown Street bridge, thereby introducing into the Hemlock water system germs of typhoid fever and other disease germs," Harry Randall, of 10 Clarence Park, has filed a claim with Corporation Counsel W. W. Webb for $2,500.

In his complaint, Mr. Randall says:

This pollution of the Hemlock system commenced, as I am informed and believe, in or about the month of June, 1909, and has continued until recently.

He says he was taken sick with typhoid fever on Sept. 20, 1909, and was dangerously ill for 15 weeks; that he became inoculated with the fever germs at his place of business, 242 Allen street, which is in the district affected by the contaminated water, the condition of which was discovered by Health Officer Goler on Oct. 3, and continues:

I have drunk the Hemlock water up to the time the health authorities gave warning of the danger, and my health has been affected during this whole period thereof, and in two weeks I suffered a recurrent attack of typhoid which my physician had succeeded in breaking up. My damages consist of injuries to my health, suffering from sickness, expense of doctors and loss of wages as a result of sickness.

Insanitary Rooming House Closed

Syracuse, N. Y.—A rooming house at No. 228 West Fayette street, having 33 rooms and sheltering nearly 100 people, has been closed by the Bureau of Health because of its insanitary condition. While the place has been known to the Bureau of Health officers for a long time, they said that the conditions were more deplorable than could have been imagined. Men, women and children, many of whom were in unhealthy condition and two sick, were crowded together in the place, and vermin and filth were everywhere. In speaking of the case, Health Inspector James P. Maloney said:

The place will remain vacant until it is thoroughly renovated and remodeled. It is a firetrap of the worst kind. Wooden partitions have been built to divide rooms; there is no ventilation and absolutely no suitable sanitary accommodations. Within the last six months two fires have broken out in the building.

Several deaths have occurred in the place and a number of persons have been transferred to hospitals. On an average of once a week the department has had to send district physicians of the Department of Charities to care for people living there. Some of the inmates appear to be respectable, but accommodations are given to many who are at least undesirable. Two of the women inmates had to be removed in ambulances to hospitals. The department will not permit the place to be occupied as a tenement again unless it is reconstructed and suitable sanitary accommodations installed.

Sewage from Municipal Buildings a Nuisance

Washington, D. C.—That the sewage from the group of municipal institutions which includes the jail, workhouse, poorhouse and quarantine stations on the banks of the Eastern Branch constitute a menace to the health of East Washington is the claim of Dr. Charles M. Emmons. The Eastern Branch has not been reclaimed and what was once a broad stream, navigable as far as Bladensburg, Md., is now a winding strip of lowlands, poorly drained by the Anacostia River.

Campaign to Purify Ohio

Columbus, O.—A campaign to educate the people of cities on the Ohio River in the need of preventing the pollution of its waters was inaugurated last week at a meeting of the Ohio River Sanitation Commission with Dr. C. O. Probst, Secretary of the State Board of Health. Dr. Probst and Dr. C. S. Schwartz, of Cincinnati, were chosen a committee to report plans for the campaign at a meeting of the commission with representatives of four other States bordering on the Ohio River to be held in Columbus, November 9 or 10. According to the plans discussed at the meeting, lectures, public meetings and the press will be used to inform the people of the necessity of keeping the water of the river pure. At the meeting in November action will be taken upon a measure to be submitted for passage to the legislatures of five states, the provisions of which would uniformly enforce sanitary regulations over the waters of the river.

Health Car to Tour State

New Orleans, La.—A health car which will rival anything ever sent out by a health board for the instruction of the people of a State will be placed in commission about November 15 by the Louisiana State Board of Health. The installation will include a pure food school, anatomical and pathological exhibit, tuberculosis exhibit and a moving picture show. A corps of lectures will accompany the car and will speak on education, hygiene and sanitation. Bacteriological tests of various sorts will be made of specimens submitted for inspection. The car will stop at every town of 250 or more inhabitants.

WATER SUPPLY

General Notice Regarding Drinking Water

Albany, N. Y.—The following notice to Boards of Health and Health Officers has been issued by the State Commissioner of Health:

Notice to Health Officers

Owing to the long continued dry weather and the consequent possibility of contamination of water supplies when the first rains occur by the washing of any filth and infected matter that may have accumulated into streams, lakes and reservoirs used as sources of public water supply, it would seem that local Boards of Health and municipal authorities should be prepared to exercise special precautions at this time to prevent outbreaks of typhoid fever.

For this reason I would suggest that the Board of Health keep in mind the advisability of issuing warnings to consumers to boil water in case the conditions surrounding the local water supply are such as to menace its purity, either at present or when the first fall rains occur. Yours respectfully,

EUGENE H. PORTER, M.D.,
Commissioner of Health.

Satisfactory Results from Use of Hypochlorite

Hibbing, Minn.—The local drinking water has been declared bacteriologically pure, according to the report received from Dr. F. F. Wesbrook, the State Bacteriologist, who analyzed samples. The sample from the hydrant at Fifth avenue and Lincoln street was found to contain some contamination, this being the result of the small amount of chemicals in use at the time, due to a shortage in the supply. This shows that the results of the hypochloride treatment are highly satisfactory, and the State official in his report states that the method in use here to purify the drinking water is shown to be very satisfactory.

Hypochlorite System Adopted in Kansas City

Kansas City, Mo.—After trips of inspection to Omaha and other cities the Fire and Water Commissioners have decided to adopt the hypochlorite system of water purification. The present system of sedimentation with the introduction of lime and alum before the water gets through the settling basins will be continued. The hypochlorite will be introduced just as the water goes into the flow line.

Testing an Electrical Process of Purification

Minneapolis, Minn.—A test of an electrical water purifying process was made last week at the old East Side pumping station at the foot of Sixth avenue S. E., in the presence of the aldermen composing the water works committee. E. T. Sykes, water works supervisor, will make a report on the estimated cost of the process.

High Service Apparatus for Fire Protection

Burlington, N. J.—The new high service pump has arrived and will be installed at the reservoir on the hill. When the apparatus is in place and there is an alarm in the section covered the driver of the hose wagon in Station 3 will pull a lever before he gets on the wagon. This will start the motor going and when the department reaches the hydrants they will find 100 pounds' pressure of water, the same as at the down-town hydrants. The pump is described in the specifications as an "8-inch, 2-stage, 1500-gallon centrifugal turbine underwriters' fire pump." The motor is described as "a 150-horsepower, slip ring motor, type H. P. 1200 revolutions per minute, sychronous speed, alternating current, 3-phase, 60-cycle, 500 volts." The apparatus was made by the H. R. Worthington Company, and the motor was supplied by the Westinghouse Company. The cost of machine is $3,145.

Eighteen Miles of Pipe Laid Out of Earnings

Duluth, Minn.—With eight small contracts nearly completed, the only unfinished work out of 54 contracts let by the Water and Light Department this year, the extension work of the department for the year is almost completed. In all, 51,444 feet of water pipe and 46,548 feet of gas pipe have been laid, or about 18½ miles of pipe. Of course, in most cases the gas and water pipe were laid in the same trench, but the total of the extension is a satisfactory one, considering that the bills were paid entirely by the earnings of the department. Despite the fact that the department failed to dispose of the 4 per cent bonds voted at the last city election, and was on that account handicapped for money, the year will be an entirely satisfactory one, both in the business of the department and in the amount of extension work accomplished. The extensions made this year cost approximately $100,000, all of which comes out of the earnings of the department. Manager L. N. Case's last report to the Board on the sales and receipts is indicative of the business now being done by the department. During September, 1909, 20,510,100 feet of gas was sold, while during the same month this year 24,325,000 feet was sold. The gain in the water sales is proportionately large, as indicated by the receipts. During the period from Oct. 1 to 12, when most of the bills for September service were paid, $16,745.75 was received for gas, against $14,097.24 during the same period last year, a gain of $2,648.52. For water the receipts during the early part of this month this year were $17,617.31, against $15,181.78 during the same period last year, a gain of $2,435.53, or an aggregate gain of $5,084.05. About $8,000 is outstanding and when that is collected, the gain will be increased to about $6,000, it is expected. The gain every month during the year has not been so great, but the gross receipts and net earnings of the department will be considerably larger this year than was the case last year, when the net earnings amounted to about $102,000.

Water Is Still Scarce

Mount Vernon, N. Y.—Although there were two days of rain last week, it did not break the water famine in Westchester County, as altogether only an inch and a half fell and the different reservoirs were not benefited to any great extent. Pleasantville, Mamaroneck and Mount Vernon are still handicapped for water, although the latter city is getting a good supply from the city of New York. White Plains is now obtaining a part of its supply from New York and the water is being pumped from the aqueduct which extends along Central avenue to Kensico reservoir to the city line.

New York Water Is Wholesome

New York, N. Y.—Manhattan water conditions continue to furnish cause for complaint. The water is discolored, odoriferous and disagreeable to the taste. Much anxiety has been caused by the possibility that the disagreeable character of the water was an indication of germs that menace health. This alarm is needless. The particular growth now appearing in New York water is called "aphanicomonon." The name is the only menace it carries. The Health Department makes a weekly analysis of the water, and should any dangerous condition obtain the public would be immediately notified. The last analysis indicates, so far as actual purity is concerned, a better condition than has existed all summer.

Water Works Profitable; Commission May Govern

Gulfport, Miss.—The City Council is giving attention to the matter of turning over the city water works to a commission. This is a plan made possible by a recent act of the Legislature. The commission would consist of five men appointed by the Council to serve without remuneration. Under the law, when any department within the municipality is found to be self-sustaining, bonds may be issued for that department in a manner independent from other bonds issued, the interest on such bonds and the bonds themselves to be paid out of the revenues of that particular department. The water-works system here is more than self-sustaining, there being a revenue therefrom last year of $9,000. The city has at present a bonded indebtedness of $387,000. If the $130,000 of water-works bonds were withdrawn from this general bonded indebtedness, the figures would be reduced to $257,000, an improvement desired.

City to Lose Lackawanna as Water Customer

Jersey City, N. J.—Proceedings have been commenced by the Morris & Essex Railroad against the Mayor and Aldermen of Jersey City for the appointment of three commissioners to fix the compensation to be paid for a subsurface easement for the construction and maintenance of a water pipe along the northerly 3 feet of the floor of the southerly tunnel through the Bergen Hill at Collard street and Beacon avenue. Supreme Court Justice Francis J. Swayze has appointed Saturday, Nov. 5, when he will hear the application. The purpose of the railroad company in taking these proceedings is to enable it to obtain a private water supply of its own. At present the company is paying Jersey City $33,000 a year for its water under a 30-year contract which may be terminated upon three months' notice.

Will Buy Water Plant or Compete with It

Niagara Falls, N. Y.—The Water Commission has presented its ultimatum to the Western New York Water Company, which is supplying the south end of the city and which has not been disposed to enter into what the Commissioners think is a reasonable contract to buy water from the new plant that the city is building. The company must fix a fair price on its plant and sell it to the city; or the city will parallel its mains. The Commissioners are determined that not only the consumers on the city mains now, but all the consumers in the city, shall have water from the new plant when it is completed. With that idea in mind they asked a conference with the officials of the private company, hoping to reach an agreement as to the price to charge the company. The Commissioners did not arrive at a definite proposition as to rates to the private company. The tentative figures are $16 for raw water and $23 for filtered water, for 1,000,000 gallons. The city will about Jan. 1 be able to pump water from the new intake near the Canadian channel and will at that time begin to distribute that water through the city mains. W. D. Robbins, Engineer of the Commission, says that the whole plant will be completed some time next July.

Intake Crib Completed

Niagara Falls, N. Y.—The Buffalo Dredging Company last week completed its work on the intake crib and the pipe line from the crib to the pumping station of the new water-works system. The contract price for the work was $74,650. The intake pipe, which is 48 inches in diameter, extends 2211 feet into the stream. It is 29 feet below the surface of the water, laid in a trench 6 feet deep. The intake gate of the crib is 7 feet below the surface of the water. An emergency intake crib was built about 500 feet from shore. W. D. Robbins, Engineer of the Water Commission, is confident that the new water system will be in operation early next summer.

Hydrant Rental $300 Per Mile of Mains

St. Paul, Minn.—The Water Board has informed the Comptroller that the city's bill for hydrant rentals for the coming year will be about $98,000. The Board fixed the rate at $300 a mile of water mains, and there are 326 miles of mains connected with city hydrants. It is said the Board is willing to reduce the rate if the city is willing to pay for water used in fighting fires. If the Board gets $70,000 it probably will consider the settlement equitable.

Approve Deep Tunnel Plan

New York, N. Y.—The State Water Supply Commission has approved the application of the Board of Water Supply of New York City for permission to construct the proposed deep pressure tunnel for the purpose of distributing the Catskill water. The decision was given after a meeting at the offices of the local board, in the City Investing Building. The proposition is for the construction of a rock tunnel under Manhattan Island to Brooklyn and steel pipes from there to Queens on the one side and to Richmond on the other. The cost is estimated at $25,000,000, and the Board of Estimate has already approved such an expenditure. The plan also includes the construction of a distributing reservoir in Richmond to hold between 400,000,000 and 500,000,000 gallons. The decision of the State commission pronounces the plans "wise, economical and justified by public necessity."

Spokane Per Capita Water Consumption Highest

Spokane, Wash.—Mayor N. S. Pratt, replying to the charge of Attorney Frank T. Post before the members of the Charter Revision Committee that municipal ownership in Spokane is a failure, as shown by the performances of the city water plant, said:

The Water Department is supplying water to Spokane consumers at the average rate of 275 gallons per capita per day at flat rates. Those rates are, on an average, not more than 50 per cent higher than those charged by Eastern cities, but on the other hand Spokane is supplying from two to five times as much water per capita as those cities which have a lower flat rate. For 50 per cent more, therefore, Spokane consumers are getting from two to five times as much water. This refutes any allegations concerning excessive rates here. It is a fact that Spokane is supplying water cheaper than any city in the United States.

In regard to supply, we have at the present time a system which will do us till we have 220,000 inhabitants. We have machinery to pump 84,000,000 gallons a day. When the city is consuming its maximum amount per capita per day, 400 gallons, we would then be able to furnish 220,000 people with water. This would be furnishing more water per capita than any city in the United States.

This year we more than doubled our pumping capacity, raising it from 34,000,000 gallons a day to 84,000,000. The water shortage that occurred this year cannot occur again. That shortage was due to the fact that the city water department had not kept pace with the growth of the city. Even when the shortage was most acute we were supplying water this summer at the rate of 300 gallons a day per capita, more per capita than any other city in the country was supplying.

Will Use Submarine Weed Saw

Denver, Col.—The Park Commission has purchased what is known as a submarine weed saw, with which to saw the weeds in the park lakes. Heretofore the weeds were cut, but next Spring they will be sawed off with the new device. The submarine saw is sunk with weights and is worked by two men, one standing on the shore and the other on an anchored raft. Ropes are attached to the ends of the saw and are pulled back and forth by the men. Colorado Springs has tried the new plan and reports that it gets action on the lake weeds much better than by the old system of cutting.

Chemist Testing Lake Michigan Water

Sheboygan, Wis.—E. J. Tully, State Chemist at the Hygienic Laboratory at Madison, was in Sheboygan last week making the surveys for the tests of lake water off this port authorized by the Lake Michigan Sanitary Commission. Seventy-two samples of water from various points off this port were taken.

Texarkana Water Rates

Texarkana, Ark.—The following new schedule of water rates has been put into effect:

$3 quarterly minimum. Rate per 1,000 gallons 40c., for which 7,500 gallons per quarter will be allowed.

$4.50 quarterly minimum. Rate per 1,000 gallons 35c., for which 12,858 gallons per quarter will be allowed.

$9 quarterly minimum. Rates per 1,000 gallons 30c., for which 30,000 gallons per quarter will be allowed.

$15 quarterly minimum. Rate per 1,000 gallons 25c., for which 60,000 gallons per quarter will be allowed.

$25 quarterly minimum. Rate per 1,000 gallons 20c., for which 120,000 gallons per quarter will be allowed.

$45 quarterly minimum. Rate per 1,000 gallons 15c., for which 300,000 gallons per quarter will be allowed.

STREET LIGHTING AND POWER

Moving Plant Without Interrupting Service

Grand Rapids, Mich.—Although the city lighting plant is to be moved from the present location near the market to the new building at the pumping station this winter. General Manager Samuel H. Freshney is authority for the statement that there will be no interference with the city lighting during the removal procedure. To avoid this, one new unit of apparatus will be purchased by the Board of Public Works, and it will be installed at the new plant. Then it will "cut into" the service and one unit at the old plant "cut out" and moved. This method will be pursued until all is installed in the new building. A general overhauling and rehabilitation will be given to the old machinery and when the new plant is working there will be generative power enough to supply the city's demands for several years. The new building is rapidly nearing completion. The large roof trusses are being swung into place and before long the building will be enclosed. It is said that the new plant will be in operation in the early Spring.

Decorative Street Lighting at Auburn

Auburn, N. Y.—Among the many improvements which Mayor Thomas H. O'Neill has been instrumental in securing for the city is the installation of a new lighting system and the erection of handsome lighting standards. The city has been testing both gas and electricity, as the gas company is finding it difficult to procure globes to withstand the elements. Several

Gas Lamp Electric Lamp

DECORATIVE STANDARDS WITH ARTISTIC STREET SIGNS

poles have been erected as models of those to be erected throughout the entire city. In connection with these poles, as shown in the illustration, there are to be placed ornamental street signs similar to those which have been placed throughout New York City, and are being considered in Chicago and other cities. The framework of these is made of iron and the name is cut out on zinc stencil with a white opal glass in back. These signs are being put in by Joseph N. Early, 127 Read street, New York City.

Rochelle Has Three Miles of Boulevard Lights

Rochelle, Ill.—Rochelle now enjoys over 3 miles of boulevard lights, covering the entire business section and a portion of the residence. The posts are 14 feet high, surmounted by two 40 and one 60-candlepower tungstens. Marine cable is used, each post fitted with a cut-out. The upper and lower lights are on separate circuits.

Water Power of Washington and Oregon

Seattle, Wash.—Oregon and Washington contain one-third of the available water power energy in the United States and between 6,000,000 and 7,000,000 horsepower can be granted in the two States, according to Fred F. Henshaw, Hydrographer of the U. S. Geological Survey.

FIRE AND POLICE

Entitled to Second-Class Fire Insurance

Gulfport, Miss.—Mayor Foote has received a letter from the Louisiana Fire Protection Bureau admitting that Gulfport is entitled to a second-class fire insurance rating, and that same will be put into effect Jan. 1. This will mean the saving of several thousand dollars annually in reduction of insurance.

Calcium Carbide Disables Thirty-five Firemen

Houston, Tex.—Thirty-five members of the Fire Department were disabled for several days from active duty by an explosion of calcium carbide. The firemen were washing out the ruins of the warehouse of the Houston Transfer Company. The intense heat caused the solder of the 300 cans to break, and the carbide was soaked with water, throwing off acetylene fumes, which, coming in contact with the dying blaze, caused an explosion. Luckily for the fire fighters, none of them were near enough to be seriously injured by the concussion of the explosion. The fire loss was $100,000.

Addition to Fine for Riding in Auto-Patrol

Macon, Ga.—The economy of operating an automobile patrol wagon is evidenced in the report of Chief of Police W. B. Chapman to the City Council last week. The report shows that for the month ending Oct. 6 the new patrol wagon only cost $11.98, and that this sum was more than covered by the extra fine of 75 cents imposed in each recorder's court case where the defendant had ridden in the machine. During the month the patrol wagon covered the total distance of 475 miles in answering both police and hospital calls.

Install New Fire Apparatus

Pomona, Cal.—Fire Chief W. H. Poston has just received two shut-off valves for use on lines of hose during fires, which will add to the efficiency of the fire fighting apparatus in time of heavy conflagration and prevent loss by water where the firemen enter burning buildings when the fire has not gained great headway. The device consists of a valve designed to be normally used on the section of hose next to the nozzle. Should it be necessary to add more hose it is not necessary to shut off the hydrant, as the valve can be closed and additional lengths screwed on. Should the firemen enter a burning building it will be possible to shut off the water until the fire is reached, thus preventing the damage which often results from water. Two stands for use on the high pressure hose lines have also been provided and will materially lighten the work of the firemen after the fire has been brought under control and the water is being used to flood the burning débris. The stands consist of an upright with cross handles for holding it. The hose is firmly strapped to the top of the cross bar.

Annual Parade of Rochester Police and Fire Department

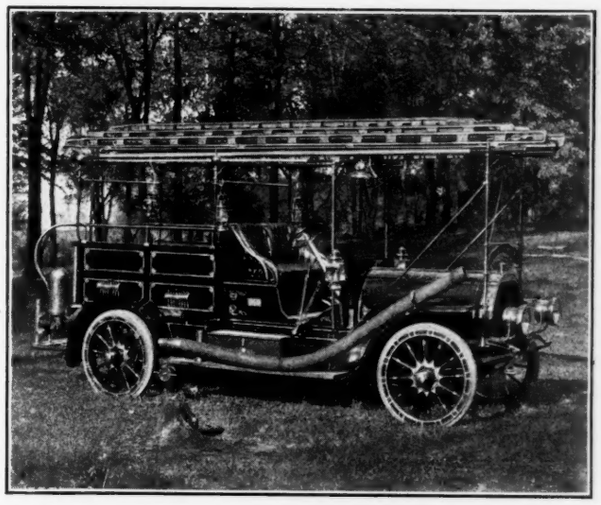
Rochester, N. Y.—The annual parade of the Police and Fire Department took place Oct. 19. The review by Mayor Hiram H. Edgerton and his official family was held in Genesee Valley Park, the old parade ground, the University Campus, no longer affording sufficient room. The parade was in two divisions, the first under Chief of Police Joseph M. Quigley, the second under Fire Chief Charles Little.

Improvements in the Fire Alarm System

Waterbury, Conn.—Fire Chief Wilson F. Clark and Electrician James Carley have been busily engaged lately making changes in the fire alarm system. The work is about completed. When the new hose house was built a separate room was designated for the entire apparatus, and modern apparatus has been installed and connected with the wires which now pass in the center of the borough through underground conduits instead of overhead on poles as formerly. Formerly there were three circuits, now there are five. This will make it less probable that the service will become disarranged by thunder storms. New brass brakewheels have been installed in all the boxes in place of the old steel ones. The new hose house is not yet in use, for delays in the completion of the finishing touches continue, but it will not be many days now before everything will be installed in the new house.

Paterson's New Auto Engine

Paterson, N. J.—The illustration presented herewith, a reproduction of the new automobile fire engine, made by the Howe Engine Company, Indianapolis, Ind., which has been installed in the new firehouse, corner Seventh avenue



HOWE AUTO FIRE ENGINE

and East Twenty-seventh street. The pump is operated by the engine that supplies the motive power. It has solid rubber detachable tires and a maximum speed of 30 miles an hour. It bears the inscription P. F. D. No. 10.

Wants Touring Car at Headquarters

Rochester, N. Y.—Chief of Police J. M. Quigley wants to have a large automobile kept at headquarters for use in emergencies. The success of a great deal of police work, he says, depends entirely on the length of time it takes policemen to reach the scene of action. The motorcycles, one of which is now stationed at each precinct, have accomplished a great deal of good in this line.

GOVERNMENT AND FINANCE

Consolidation Planned for City and County

Los Angeles, Cal.—The first step toward the consolidation of Los Angeles City and County was taken officially last week, when Mayor Alexander sent a message to the City Council asking that body to appoint a commission to devise measures to carry out the plan. The Mayor pointed out that the proposed consolidation of the city and county governments would effect a large saving of public revenues, and at the same time simplify the problem of distributing the new water supply from the Owens River aqueduct. The Mayor urged that the commission get to work without delay.

Paying for Public Buildings Out of Direct Taxes

Los Angeles, Cal.—Los Angeles County is establishing a record in the State for the erection of public buildings without a bond issue. Hardly a county or town in the State builds a public edifice—city hall, courthouse, school or jail—without a special bond issue to pay for the improvement. In marked contrast with that plan, Los Angeles County has expended or is about to expend a total of more than $2,000,000 in public buildings, covering a period of about four years, and not a cent of the money comes from a bond issue. The taxpayers of the county are meeting the bills year by year from the direct levy of annual taxes, leaving not a cent of the expenditure to be borne in future years in the shape of bonds and interest. Those familiar with such matters claim the showing made by Los Angeles County in this respect is without precedent. Here is a list of the buildings which have been completed recently or which will be completed within the four years ended Jan. 1, 1912:

Hall of Records.....	$1,500,000	Detention home.....	40,000
New hospital wards...	300,000	County farm buildings.	60,000
Hall of Justice.....	90,000		
Art Museum.....	150,000	Total	$2,140,000

City to Establish a Burning Day

Holyoke, Mass.—The Aldermen will soon be asked to establish a municipal burning day. On the day that will be designated practically all city documents in the way of bills, receipts and the like more than seven years old will be burned. The move for establishing the burning day comes at the suggestion of M. F. Woods, State Commissioner of Records, who was recently in Holyoke and inspected the manner and methods of storing public documents here. The inspector found that quantities of practically valueless papers are being carried. These useless papers occupy the storage room and prevent the proper care of the really valuable records. There is a provision of the law which gives the Aldermen the right to establish a burning day and to designate the officials who shall do the work. It is probable that the duty of destroying the papers will be laid on City Clerk J. F. Sheehan and City Messenger William Walsh.

Salaries for Officers and Employees Readjusted

Montgomery, Ala.—A new salary schedule for city officials and employees has been made up as follows:

Mayor, $3,600.

Secretary to the Mayor, $1,200, with an additional $300 as Secretary to the Police Commission.

City Clerk, $2,400, an increase of $200.

City Treasurer, $2,400, an increase of $400.

City Sexton, $1,500, an increase of $300.

Market Clerk and City Purchasing Agent, $1,500, an increase of $300; Assistant Market Clerk, $600, an increase of $120.

City Physician, $1,200, an increase of $200.

City Health Officer, $1,200, an increase of $200.

City Chemist and Bacteriologist, $1,800 and feed for one horse, an increase of $300.

City Engineer, $2,600, and feed for one horse, an increase of $200; Assistant City Engineer, $1,500, and feed for one horse, an increase of $150; Chief Clerk in Engineering Department, $1,200. Inspector of Paving, $6.50 a day for time spent in the service, an increase of 50 cents a day.

Superintendent of Streets, $1,350, an increase of $150.

Captain of Police, $1,620, an increase of $120; Sergeants of Police, $1,200; bookkeeper for Police Department, $1,080, an increase of $60; eight mounted policemen, $1,000 each, an increase of $50; ten bicycle policemen, $1,000 each, an increase of $50; thirty-one patrolmen, first and second years, $900, an increase of $60; third year $960 each, an increase of $40.

Chief of Fire Department, $2,000, an increase of $200; Assistant Chief, $1,350, an increase of $150; drivers, first year $840, an increase of $60; second year $900 each, an increase of $60; tillermen, first year $780 each, an increase of $60; second year $840, an increase of $60; pipemen and laddermen, first year $780 each, an increase of $60; second year $840, an increase of $60.

Policy Regarding Unused Franchises

New York, N. Y.—Attorney-General O'Malley in a communication addressed to the executive committee of the Franchise Conference of New York City answered the inquiry of that committee as to what his attitude would be in clearing away from the streets of the city of New York the burden of unused public service franchises. Attorney-General O'Malley states that his attitude is best evidenced by what he has actually done in regard to such franchises during his present administration as Attorney-General. He points out that he has already brought two actions for the forfeiture of these unused franchises in the city of New York, one against the Forty-second Street, Manhattanville & St. Nicholas Avenue Railway Company and one against the Bleecker Street & Fulton Ferry Railway Company, at present being operated by the receivers of the Metropolitan Street Railway Company, and is now vigorously prosecuting these actions through the courts. The Attorney-General goes on to say that he is preparing actions for the forfeiture of other franchises in the city of New York, where, on account of abandonment or for other good causes, they are subject to such actions. Concluding his letter the Attorney-General says:

I do not want it understood that I have any purpose to attack indiscriminately any franchises to which the public service corporations in the State or in the city of New York have good title and are using in good faith; or by any ill-considered or unwarranted action to impair the credit of the securities which have these franchises as their basis. But where there is abuse and they are not operated in good faith, it is my intention to prosecute vigorously proper actions.

STREET CLEANING AND REFUSE DISPOSAL

Report on Garbage Disposal

Atlanta, Ga.—After a careful investigation of garbage disposal in New York, Washington, Columbus, O., Indianapolis, Cincinnati and other cities a committee of the Board of Health has made the following recommendations, which have been adopted by the Board:

1. Your committee recommends that the refuse of the city of Atlanta be required to be separated into three kinds, namely, garbage, trash and ashes. Garbage is defined as kitchen refuse, carcasses of small animals, etc. All garbage to be placed in covered cans or other water-tight receptacles with suitable cover. Ashes to be placed in a separate receptacle, which shall be a box, or barrel, or other suitable vessel. Trash and rubbish shall be placed in any suitable receptacle, and separate from ashes and garbage. We would recommend that Council be asked to pass such an ordinance requiring tenants or householders to provide and use separate receptacles as above for all refuse, and that this ordinance be operative on and after January 1, 1911.

2. That this committee be authorized to select a site, not less than 30 acres, outside of the limits of Atlanta, on which to erect a reduction and an incinerating plant, with equipment, the plant and equipment to cost not to exceed $250,000, which sum will include the $50,000 crematory bond issue, already appropriated.

To Keep Garbage Carts Covered

Atlanta, Ga.—Mayor Robert F. Maddox, acting on a suggestion of Mrs. W. Woods White, president of the City Federation of Women's Clubs, has recommended that the Board of Health adopt a regulation requiring all garbage carts to be covered.

Sprinkling Contractor Loses Money

Indianapolis, Ind.—The sprinkling of unimproved streets closed for the season last week. City officials say the city has received the cheapest sprinkling in its history this year, as it has cost something less than $40,000. In 1908 it cost $39,310.98, while last year it cost $59,000. More territory has been covered this year than in any previous year. The sprinkling has been done this season by Gemmer & Henry at the rate of $17.60 for each 10,000 square feet sprinkled during the season. Out of the appropriation of $40,000 for sprinkling, approximately $4,500 has been paid by the city for sprinkling inspectors. There will be a small balance left in the sprinkling fund. Charles Gemmer, member of the firm, says his company has lost several hundred dollars, but that he was determined to have the contract rather than let his wagons and teams remain idle this year. "A few years ago," said Gemmer, "the sprinkling contractor received $48 for each 10,000 square feet of surface sprinkled during the season. At that time men could be obtained for $7.50 a week. Corn was 35 cents a bushel; oats, 25 cents a bushel; hay, $9 a ton, and horseshoeing, 75 cents to 90 cents. Now men must be paid $10 to $12 a week, corn is 60 cents; oats, 40 cents; hay, $14 to $18, and horseshoeing, $1.25."

Oil Cheaper Than Water

Pawtucket, R. I.—According to the figures given out by the Commissioner of Public Works last week, it has cost less this year to lay the dust on the highways by the use of oil than it cost to attempt to do so by the use of water in previous years. The total figures which were made public give about $2,000 in favor of the oil. But it will be very generally admitted that the advantage in other ways is so much greater that had the money cost for the oil been greater every one in the city would have approved the policy of the highway department. Of course, the cost of oil is greater than the cost of water, but the saving is in the matter of labor. One man with a wagon and pair of horses can keep only a small section of the city sprinkled with water, while that same outfit, having gone over a stretch of street with oil, is not required to visit that particular place again for weeks.

Dispute Over Pay for Night Work

Superior, Wis.—Owing to complaints from the Business Men's Association, City Comptroller John E. Erickson has refused to pay the street cleaning contractors for a full night's work when they worked less than nine hours. The contractors admit that they did not work more than seven or eight hours, but state they cannot afford to send men and teams out for less than a full night's work.

RAPID TRANSIT

Council Inspects Trolley Freight Service

Boston, Mass.—As guests of the Boston Elevated Railway Company, the Boston & Northern and the Old Colony companies, the Boston City Council last week went on a tour of inspection of trolley freight service in the southeastern section of the State. The party left Post Office Square at 10 o'clock in the morning in a large convertible car of the Old Colony road and proceeded to Brockton, thence to Taunton and to Providence, where dinner was served. Leaving Providence about 3 o'clock, the car ran over to Fall River and New Bedford. The trip was by invitation of the railway men, extended at the hearing given by the Council at City Hall recently on the petition of the Elevated company for permission to carry freight through the streets of Boston. This petition has been in the minds of the railway people for at least two years. Roads entering Boston are particularly desirous of the privilege owing to the fact that other cities have granted similar rights and that the business demands entrance into Boston.

Height Line to Fix Fare of Children

Cincinnati, O.—There has been completed at the plant of the Cincinnati Car Company at Chester Park a model interurban car that was built under special design for the West Penn Railways Company, of Pittsburg. While the car itself is a radical improvement over existing cars of this class, one of the really novel features is the "height line" to settle disputes relative to children's fare. This company has discarded the age limit on children and will use the "height line," which is a line painted across the car 45 inches from the ground. When there is a dispute relative to the fare to be paid for the child it is measured up to this line. If taller it pays full fare and if below the line it goes for half fare. The car, which is 60 feet in length, has closed ends and the entrance in the middle. The bed of the car rides 3 feet from the rails and in the center between the trucks the floor drops one step. On either side of this center entrance are the seats, and the conductor rides in the center, where is also the smoking and baggage compartment. Either end of the car can be used by the motorman. The car is very light, but equal in strength to the heaviest of interurban cars. The advantages of this design are increased seating capacity and the elimination of the weight used in the heavy platform ends as now constructed.

Council Wants Information About Plans for Improved Transit

Philadelphia, Pa.—Councils have taken a hand in demanding better transit facilities by passing the following resolution:

Whereas, The chief argument for the adoption of the ordinance creating the agreement or contract between the city and the Philadelphia Rapid Transit Company was the solemn promise of an improved service; and

Whereas, The facilities, as a whole, are to-day even more deplorably inadequate than they were before the contract of 1907 was entered into, routes and fares, particularly in South Philadelphia, as well as in other sections of the city, being changed, radical alterations being made since October 1, to the decided disadvantage of the public;

Resolved, By the Select and Common Councils of the city of Philadelphia that the Philadelphia Rapid Transit Company be requested to restore the service at least as it existed before October 1; and

Resolved, That the company be requested to communicate to Councils its plans for the financial and physical development of the system.

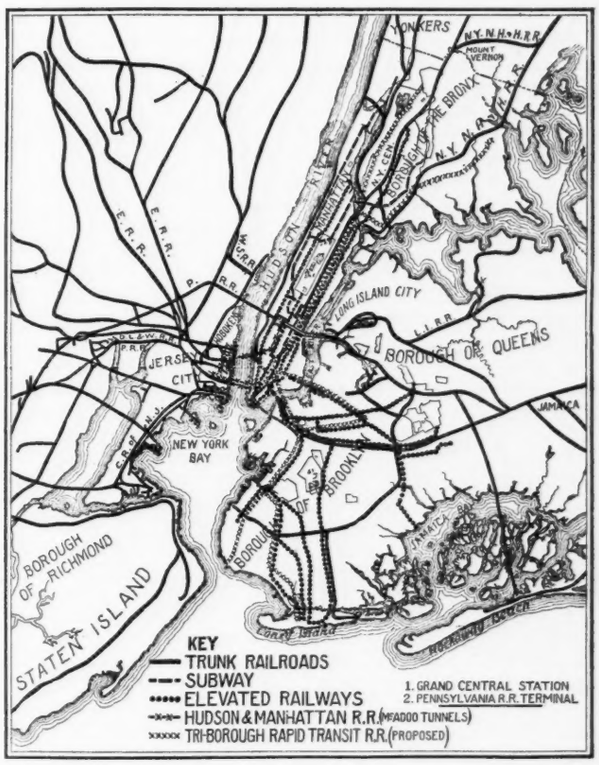
Plans Talks on Franchise

Toledo, O.—Later in the year, probably, Judge Robert W. Tayler, of Cleveland; City Solicitor Newton Baker, of Cleveland, and Bion J. Arnold, of Chicago, will be invited to Toledo through the instrumentality of the Toledo Chamber of Commerce to speak, following dinners, upon the subject of street railway franchises. These men have had much to do with the settlement of the transportation problem in their home cities, and the members of the Chamber of Commerce, as well as all other citizens, are desirous of securing as much information as possible. H. I. Shepherd, of the Chamber of Commerce; E. H. Cady and Louis H. Paine, also members, called upon Mayor Whitlock last week and discussed the subject of inviting the men here.

Many Contractors for Building Subway with City Money

New York, N. Y.—When the Public Service Commission opened the bids October 27 for building the new triborough subway it was found that 23 contractors were willing to do the work with the city's money. They submitted 77 bids. A week ago, when the commission met to consider propositions for the building of the subway with private capital, there was not a single offer. The bids received were for the construction of those parts of the triborough route which include the Broadway-Lexington avenue subway, the Canal street crosstown section and the Broadway-Lafayette loop in Brooklyn. These three routes were divided into 21 sections. Sixteen of these sections were those into which the Broadway-Lexington avenue line had been divided. The Canal street line was divided into two sections and the Broadway-Lafayette route into three.

The Broadway-Lexington avenue subway will be double-decked for almost the entire length of Lexington avenue. The Broadway-Lafayette avenue subway in Brooklyn and the Canal street in Manhattan will be two-track construc-



RAPID TRANSIT MAP OF NEW YORK

New Construction as shown on Key above

tion, but in the Broadway-Lafayette plans provision is made for the addition of two tracks in the future. Under the form of contract for municipal construction bids were made on the unit price system. That is, the contractor, in place of naming a lump sum for the work, bid the prices at which he will furnish certain materials or do certain work necessary for the construction of the subway. As there are as high as 127 separate items in the lists of quantities, it will take a long time to record and tabulate the bids. The work has been divided into small sections so that the ordinary contractor with average equipment was able to bid. The contracts call for the building of the subway, but not for the laying of rails or finishing of stations.

The time for the completion of the Broadway-Lexington avenue route is forty-two months from the time of the delivery of the contract, except in the case of Section IV from Broadway through private property, cross streets to Fourteenth street and Irving place, which is thirty-six months. The time for the completion of the Canal street road is forty-two months, and for the Broadway-Lafayette route thirty months.

MISCELLANEOUS

City Contract Enjoined

Boston, Mass.—Judge Richardson, sitting in the Equity Court, ordered an injunction to issue restraining the city of Boston from paying any money to Peter F. Dolan and the latter from proceeding under the contract recently awarded to him by Superintendent Fish, of the Public Buildings Department of the city, for installation of electrical equipment in Curtis Hall. The court held that the award to Dolan was illegal because it was given to him and not to James Wilkinson & Company, a lower bidder, because a delegate had called upon Fish and informed him that Wilkinson did not employ union labor and was unfair to it. This decision is one of the most important to organized labor that has been handed down in years.

Preliminary Outlines for Boston's Zoological Garden

Boston, Mass.—Detailed plans of proposed zoological garden for Franklin Park and the Aquarium at Marine Park, in colors, were sent to the City Council last week by Mayor Fitzgerald, who received them at noon from the Boston Park Commission. The sum of $10,000 was appropriated by the Council for this work. Accompanying the designs is the report of the Commission, explaining the results of months of study on the part of the Commission, Arthur A. Shurtleff, landscape architect; William D. Austin, architect, and the advice of William D. T. Hornaday, director of the New York Zoological Garden. The estimate for a beginning of the zoological garden is placed at $240,000, with the "Greeting" costing $200,000 more. For the aquarium it is estimated that the building planned could be built for $100,000. The Commission has planned for hardy animals only and such as could live out of doors all winter, and the report says as such a limited programme could not embrace wide ranges of natural history the Commission was inclined to present one branch in a scientific and thorough manner, i. e., the birds, and have the other exhibits less scientifically thorough, but more in the nature of popular attractions.

Secret Stairways Feature of City Hall

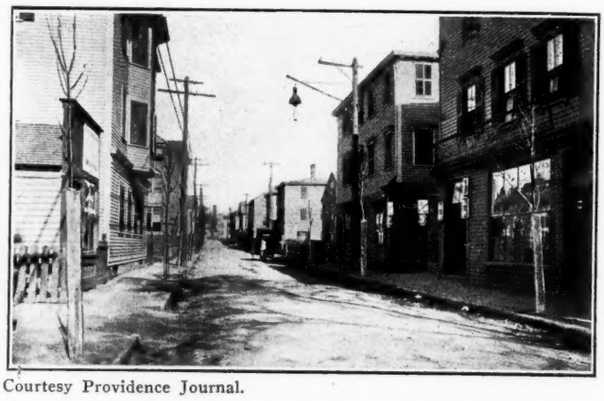
Indianapolis, Ind.—After he moves into the new City Hall building there will no longer be any need of Mayor S. L. Shank leaving the city to avoid job hunters and others who make his life more or less miserable. The structure, which probably will be occupied some time in December, has so many secret stairways and other conveniences for avoiding undesirable callers that the Mayor may remain right in the building, yet keep his exact whereabouts unknown. The Mayor and members of the Board of Public Safety made a trip of inspection through the building last week, and the thing that seemed to impress the Mayor most was the secret stairway leading from the Mayor's office upstairs and down. Several suites of offices are provided with narrow, winding stairways, built between solid walls. The Mayor will be able to leave his private office, go down his private stairway into an office on the first floor and leave the building without going through the public corridors. Or, if he wishes, he may go to any of the upper floors without being seen. The City Council Chamber is also provided with a secret stairway. The Westlake Construction Company, general contractor, expects to finish its work about Nov. 15.

Mayor Would Have Newspaper

Indianapolis, Ind.—Mayor S. L. Shank expects to take up with the City Council the question of publishing a municipal weekly newspaper, to be known as Indianapolis Municipal Facts. Similar newspapers are issued in Philadelphia, Denver, Boston and Des Moines. The Mayor believes such a publication would keep the public in close touch with municipal affairs, his intention being to have all matters appearing in its columns printed without comment. He also says the newspaper, if started, will be kept free from politics. It is estimated that it would cost from $5,000 to $10,000 a year to publish the paper, and if the City Council is favorable to the project the Mayor will ask for an appropriation. Former Mayor C. W. Bookwalter once requested an appropriation for a similar purpose, but it was denied by the Council.

Tree Planting in Providence

Providence, R. I.—Twenty-four of the 5,000 trees that are to be planted in Providence this fall are shown in the accompanying illustration of Chaffee street. The trees are maples 1½ inches in diameter, set 40 feet apart and protected



Courtesy Providence Journal.

TREE PLANTING COMPLETED, CHAFFEE STREET.

with a tree guard. Twenty-eight men and six wagons are engaged in the work. From 100 to 200 trees are planted daily, and it is intended to keep up the work and make Providence a city of trees.

One-Way Traffic

New Bedford, Mass.—That New Bedford really intends to follow in the footsteps of Boston and Providence in the matter of one-way traffic in the center of the city was quite evident in the recommendation last week by the Special City Council Committee of an ordinance that was proposed by Councilman Doyle concerning the traffic problem. Two one-way streets are provided for in the ordinance, Purchase street, between Union and Elm streets, with the traffic in a northerly direction, and William street, between Pleasant street and Acushnet avenue, in an easterly direction, between the hours of 7 a. m. and 9 p. m. Unlike the rules laid down by the Boston and Providence authorities, no provision has been made for drivers in turning corners or giving traffic signals to drivers that may be following, although it is required that the vehicle cannot stand more than five minutes.

Prevents Discrimination Against Municipal Wharves

Oakland, Cal.—Council has adopted an amendment to the Southern Pacific franchise barring the Southern Pacific Company from competing with Oakland in the wharf and dock business. Mr. Pendleton explained at the meeting that during the past week he came upon a rate book of the railroad corporation and learned that the railroad was charging shippers from private or municipal wharves in all parts of the city $1.10 for the hauling of freight which it charged 80 cents for when taken from the long wharf, which is its exclusive property.

Law to Provide Parks in Utah Cities

Salt Lake, Utah.—At a meeting of the Boards of Park Commissioners of Salt Lake and Ogden, held last week in the Commercial Club, an amendment to the existing State statute to provide authority for the commissions to levy and collect taxes on public park improvement work, was presented and adopted, and the efforts of all Park Boards throughout the State will be solicited toward the passage of the measure at the State Legislature next January. If the measure is passed it will provide for a general tax for the maintenance of boulevards, streets, avenues and wherever parking is considered essential. The act recommends that first-class cities—those of 30,000 or over—must levy a mandatory tax of .5 mill on every dollar of the city's assessed valuation and provides that the city may, at its option, levy 1 mill. On the basis of a one-half mill tax to Salt Lake City's assessed valuation of $55,000,000, the local tax would be $27,500. Under the provisions of the amendment, second class cities—those with populations between 5000 and 30,000—must levy a mandatory tax of 1 mill to the dollar and may levy a 2-mill tax.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Contracts—Estimates of Quantities

McKivor v. Savage—Parties to a contract for a street improvement consisting of excavating and the laying of a pavement may provide that all measurements and estimates of quantities of work shal be made by a third person and that his determination shall be final. The estimates of a third person authorized by the parties to a contract to make estimates which shall be conclusive cannot be impeached by either party without a showing of fraud or mistake so gross as to imply bad faith of the third person or his failure to exercise his honest judgment on the matters submitted to him. The judgments of the city engineer selected by the parties to a contract for a street improvement consisting of excavating and the laying of a pavement to make measurements and estimates of the quantity of the work which shall be conclusive cannot be impeached by proof that on a measurement by another engineer it was found that rather more excavation had been done than the city engineer's estimates showed and that in certain places the concrete base and sand cushion were thicker than 4 inches, a uniform thickness of 4 inches being one of the dimensions used by the city engineer in making his estimates; it being conceded that the city engineer exercised his best judgment. A contract for a street improvement consisting of excavating and the laying of a pavement, which provides that the yardage shall be ascertained by measuring the cubic yards in the concrete base and adding thereto the number of cubic yards of sand used in the sand cushion and in the filler, does not allow for all materials furnished and put into the concrete, and where yardage measurements of concrete when mixed is less than the sum of the yardage measurements of the materials of which it is composed, a method of measurement need not be adopted that will allow a yardage equal to the yardage of the sand and gravel furnished if measured separately.—Supreme Court of Washington, 110 P. R., 811.

Garbage Contract—Assignment

De Vita v. Loprete et al.—A stipulation of a contract awarding to a person the right to collect and remove the garbage of a city for a specified sum that no assignment of the contract or any part thereof shall be made without the consent of the city first obtained is valid to discourage collusion among probable bidders, and to prevent extortionate contracts from being forced on the city, and equity will not enforce a prior contract between such person and others for the carrying on of the contract as a partnership. Where a person has entered into two independent contracts with different persons, each valid and enforceable, equity will not compel him to violate provisions of one of the contracts to the injury of the other party thereto for the purpose of affording relief under the other contract.—Court of Errors and Appeals of New Jersey, 77 A. R., 536.

Street Car Fares—Annexed Territory

People v. Detroit United Railways.—An ordinance accepted by a street railway company providing that at certain hours during the day the company should charge certain fares over its lines within the city must be construed strictly against the company, and therefore has equal effect in territory subsequently annexed to the city. A city ordinance of general effect operates throughout its actual boundaries, though they be enlarged from time to time. The terms of a franchise must be construed strictly against the grantee.—Supreme Court of Michigan, 127 N. W. R., 748.

Street Closing—Municipal Authority

Chambers v. Roanoke Industrial & Agricultural Association et al.—In the absence of authority from the General Assembly, a city cannot authorize an agricultural association to fence in part of a public street and erect barns, etc., thereon. Streets and highways belong not partially, but entirely, to the public at large, and the supreme control over them is in the Legislature. Any unauthorized obstruction which unnecessarily impedes or incommodes the lawful use of a highway is a public nuisance at common law.—Supreme Court of Appeals of Virginia, 68 S. E. R., 980.

Sewage Disposal Plant—Nuisance

Adler & Company et al. v. Pruitt.—A county, through a commission created by Local Acts, constructed as authorized by the act a sewer system and purification plant after contracting with an individual, who, in consideration of the exclusive right to use the products of the plant, bound himself to pay the cost of the plant and its maintenance. The county stipulated for the exclusive control of the purification of the sewage. The plant was built, and the individual operated it and paid the cost thereof directly. The plant was unequal to the accomplishment of its purpose, and a nuisance was created by its operation. Held, that since, in the absence of express statutory provisions, it could not be assumed that it was intended to legalize an act necessarily resulting in a nuisance, nor that the system would have been constructed except for treatment of the sewage in the purification plant, the proximate cause of the nuisance was not the statutory authorization, but the operation of the plant by the individual, and he was liable therefor As between one who furnishes money for the construction of a plant, lawful in itself, and one who operates the plant, the former is not generally chargeable with the knowledge that the plant will become a nuisance, but the actual operation of the plant must determine whether its operation will become a nuisance; such intervening cause consisting of the actual operation becoming the proximate cause of a resulting nuisance. A witness who was familiar with a sewage purification plant, and who had visited it under different weather conditions and at different times, was competent to give his opinion as to whether under any wind or weather conditions he could smell odors from the plant while standing at a certain place to show the volume and intensity of the odors from the plant, and the consideration that the wind blew away from him on the occasions he visited the plant, and that the jury were as familiar with the facts, merely went to the weight of the evidence. Where, in an action for a nuisance caused by the operation of a sewage purification plant, the evidence showed a common purpose by the builder and operator of the plant that the solid product of the plant should be used on a tract adjacent to the plant, and that it was used accordingly, the tract was a part of the plant so that damages were recoverable from the nuisance caused by the spreading of the solid matter over the tract, though the complaint attributed in general terms the injuries to the building and operation of the plant.—Supreme Court of Alabama, 53 S. R., 315.

Street Railway—Highway—Turnpike

Atlantic & Southern Railway Company v. State Board of Assessors et al.—Within the meaning of the act of 1906 providing for the taxation of the franchises of street railway corporations occupying public streets, highways, roads, lanes and other public places a turnpike is a "public place." A trolley line upon land which has been dedicated as a street, but which dedication has not been accepted by the public authorities, is not upon a public street or public place within the meaning of the statute. For most purposes a "turnpike" is regarded as a highway, and it may be said to be generally so regarded when the term "highway" is used in a statute unless the words and purposes of the act display a different legislative intent. The status of land over which its owner has dedicated a street is that, while the owner may be estopped from retracting his dedication, yet, until there is an acceptance of the street by some municipal act or by public usage, the public acquires no rights therein and is subject to no duties by reason of the dedication.—Supreme Court of New Jersey, 77 A. R., 610.

Villages—Employment of Attorney

Hosner v. Village of Leonard.—Comp. Laws require the president of a village to enforce the laws relating to the village and the ordinances and regulations of the Council; and provides that prosecutions for violations of ordinances may be commenced by warrant and that the proceedings shall be substantially the same as in criminal cases. Held that, in the absence of any action on the part of the village Council providing for the employment of an attorney to conduct prosecutions for violating the village ordinances, the president of the village had authority to employ an attorney for that purpose, and to bind the village to pay the attorney a reasonable fee.—Supreme Court of Michigan, 127 N. W. R., 749.

NEWS OF THE SOCIETIES

City Club of Philadelphia — Dr. Charles E. Merriam, of the Board of Public Efficiency, of Chicago, addressed the members of the club at the regular Saturday afternoon luncheon at the clubhouse, October 22, on the work the board has done in connection with the Chicago city government. He outlined the work as one of straightening out the accounts of the city departments; of manipulating the appropriations so that all departments were properly covered and of working the city employees so that the city secured the greatest benefit from their services. In speaking of the budget, he said that the board had been able to "squeeze a good bit of water from the annual appropriation." The board, he said, was a private organization, financed by subscriptions, free from all political influence, and therefore able to accomplish work that an elective board or a board appointed through political routine could not attempt. When the board was first founded the Chicago officials did not understand its purpose and were therefore bitterly opposed to it, but after it had begun its work honest officials threw open their offices in order to prove that they were not responsible for any of the shortcomings of the city. It proved to be a board which vindicated honest officials, but brought dishonest ones to justice. He said that the board intended to continue its efforts along an entirely new line. This was necessary owing to the fact that boards of investigation usually send several men to jail, straighten out matters for the present, but allow the principles through which graft had been possible to stand as they were before the investigation. Realizing this, the Chicago board not only set about to ferret out all crookedness, but discovered the passageway and had the government changed. This, he said, should continue the efficient work.

Albert E. Turner, a director of the local Bureau of Municipal Research, made a brief address while Dr. Merriam was being questioned by the members. He declared that the work of the Research Bureau was being done quietly and was meeting with great success. He said that when the bureau first began its investigations the officials were skeptical, but that recently most of the city offices had been thrown open to them, and they had been asked to co-operate. This he called the first citizen offer of co-operation after several years of public investigations and scandals. In speaking of the recent stir about the official acts of Dr. Neff, Director of Health and Charity, he said: "I want to say right here that there is no more honest or earnest city official than Dr. Neff." In contrasting the board with the Chicago board he said that they were just opposite. Chicago had its appetite whetted for the sensational announcements of the board, while the Philadelphia people had not been disturbed by announcements.

C. J. Hexamer brought up the question of city contracts by asking the speaker if he thought it better for the city to do its own construction work or to give out contracts, but Dr. Merriam refused to be drawn into giving an opinion on a question that has been disturbing Philadelphia for some time. He only said that the success of a city handling its own construction work was largely measured by the efficiency of its government. Afterward Mr. Hexamer, in trying to continue the discussion of the question, made the suggestion "How would it do to elect one man who would be responsible for all construction work?"

St. Paul City Club—Sentiment of the leading civic organizations of St. Paul, as well as that of individuals not directly affiliated with these organizations, in favor of a comprehensive plan which would insure the practicable development of the municipality along definite lines, found expression in a meeting held in the Mayor's reception room October 18 for the purpose of organizing the St. Paul City Club, to have for its object the working out of a "city plan" in co-operation with the municipal commission delegated by the common council. The filing of the articles of incorporation with the secretary of state and county register of deeds today will complete the organization. The St. Paul City Club was organized under the auspices of the St. Paul Institute, but membership in the Institute is not necessary in order to become a member of the club. The articles of incorporation provide that delegates from church societies, clubs and other organizations are entitled to a voice in the counsels of the club and are entitled to vote on any question. The articles also provide for a board of directors consisting of thirty-five members, who shall be elected annually the first Tuesday in October, and each of whom shall hold office for one year. The president and secretary of the St. Paul Institute, the president of the Woman's Civic League, and the president of the Commercial Club will be members ex-officio of the board of directors.

Officers of the club will consist of a president, three vice-presidents, a secretary and a treasurer. The Mayor of St. Paul will be honorary president of the club ,and the president of the common council will be its honorary vice-president. The board of directors is given power to increase its membership to fifty at any time.

After ratifying the articles of incorporation the City Club perfected its organization by electing the following officers and members of the board of directors:

President, Louis Betz; first vice-president, Miss Mary Newport; second vice-president, Right Rev. J. J. Lawler; third vice-president, Mrs. F. B. Kellogg; secretary, E. P. James; treasurer, L. H. Ickler; members of the board of directors, Louis Betz, H. H. Bigelow, Mrs. W. E. Bramhall, Charles W. De Vinney, Mrs. Paul Doty, Mrs. Robert Earl, W. A. French, N. R. Frost, Mrs. C. E. Furness, A. Guiterman, H. G. Haas, C. Johnston, Mrs. F. B Kellogg, Right Rev J. J. Lawler, F. B. Lynch, Miss Allison McKibbin, J. S. McLain, Louis Nash, A. J. Nason, Miss M. M. Newport, J. C. Nolan, Miss Hestor Pollock, J. A. Seeger, Mrs. C. A. Severance, W. Siwart Smit, Miss Clara Sommers, Mrs. F. C. Stevens, A. B. Stickney, Grant Van Sant, Mrs. Percy Vittum, W. A. Wells, Webster Wheelock, W. G. White, Edward Yanish and J. A. A. Burnquist.

The meeting is the outcome of several executive sessions of the St. Paul Municipal Arts Association, a section of the St. Paul Institute, which has taken interest in civic improvement in St. Paul. These sessions were held to devise means of obtaining a city plan, which proposition was approved by the Common Council by solicitation of the Women's Civic League.

A committee was named by the Municipal Arts Association to draft the articles of incorporation and to nominate officers for the club. Every detail for the organization was completed prior to the call of the meeting. Louis Betz, who heads the organization, is chairman of the Capitol Approach Commission, and the Woman's Civic League is likewise given representation in its list of officers. The Mayor, Common Council and the Municipal Arts Association are similarly honored.

The St. Paul City Club is not to take the place of any similar organization now in existence in St. Paul, but its purpose is to co-operate with them in anything that pertains to the general interests of the city, while its primary object is to obtain a city plan and educate the people as to its desirability and work for its adoption. The club does not propose to take the work out of the hands of the committee authorized by the Common Council, but it intends to aid in obtaining funds, engaging experts and campaigning merely with a view of co-operation to the end that the best city plan possible will be procured and that it will be adopted.

New England Water Works Association.—The November meeting will be held at Hotel Brunswick, Copley Square, Boston, Wednesday, November 9, at 9:30 a. m. The headquarters in Tremont Temple will be open for the use of members, and 10:00 a. m., on invitation of William E. Hannan, Water Commissioner, a visit will be made to the yard and shop of the Boston Water Works at 710 Albany street. At this yard may be seen the manufacture of gates and hydrants, small composition fittings, wooden patterns and concrete gate boxes, also stock of water pipes and specials, meter testing and repairing, general maintenance, etc. The meeting of the Executive Committee will be held at the Hotel Brunswick at noon, and at 1:00 o'clock lunch will be served there. At 2:00 o'clock Dr. John T. Cahill, Mayor of the City of Lawrence, will address the association on Water Works topics, and papers will be presented by Allen Hazen, Consulting Engineer of New York, and Edward S. Cole, C. E., of New York, the latter on the subject of "Water Consumption and Statistics Relating Thereto," following which there will be topical discussion.

The nominating committee has submitted the name of Allen Hazen for President to be voted upon at the annual meeting, January, 1911. The secretary, treasurer and editor are recommended for re-election. George A. Kent, Taunton, Mass., is President, and Willard Kent, Narragansett Pier, R. I., Secretary of the Association.

Engineering Society of George Washington University—Plans for the season's work were considered and new officers were elected at a recent meeting of the Engineering Society of George Washington University. The new officers are: Roy F. Carty, president; F. A. Howard, vice-president; J. H. Hession, secretary, and A. M. Prentiss, treasurer. Dean Hodgkins addressed the meeting at the invitation of Vice-President Emery Losier, who presided. He suggested that the privilege of attending the lectures of the society be extended to all students.

St. Paul Commercial Club.—The club has published a handsome booklet with colored illustrations describing the interesting points about St. Paul. The views include city parks, buildings and streets.

International Town Planning Conference—The conference was opened at the Royal Academy, Burlington House and the City Guildhall, London, England, October 10. The delegates included Lord Mayors, Mayors, Town Clerks, surveyors, architects, engineers and foreign visitors. John Burns, President of the Local Government Board, was the Honorary President. Leonard Stokes, President of the Royal Institute of British Architects, was the President, and J. W. Simpson, the General Secretary. At Burlington House there was an interesting display of plans and models in connection with the towns planning movement, illustrating what has been done in Great Britain and other countries and showing the possibilities of the movement. In the course of his address Leonard Stokes said that the town planning bill did not go far enough in being permissive rather than mandatory. John Burns, author of the Town Planning Bill, said that 50 per cent. of total pauperism, and more than 60 per cent. of its total cost, much of the lunacy, a great part of the crime, debility and dependence were due to sickness. Disease could not be avoided unless sun and air were let into the streets. During the past 30 years 550,000 houses had been built in Greater London, 8,500 new streets had been formed, measuring 1,500 miles, and only 25 new squares had been created. The speaker closed his remarks with an appeal for the improvement of the living conditions of the poorer citizens. A paper by Sir William B. Richmond on Some Factors in Town Planning said that symmetry of plan might be ad nauseum, while unsymmetrical arrangement might degenerate into affectation. Several papers were read on Cities of the Past, Dr. Thomas Ashby, dealing with Rome; Professor Haverfield, with Town Planning in the Roman World, and Dr. A. E. Brinkmann with Gothic Towns in the South of France. C. H. B. Quennell, speaking of Town Planning and Land Tenure, said a recent act regarding land valuation would prove to be a powerful aid. Professor G. Baldwin Brown read a paper on Town Planing and Preservation of Ancient Features. Charles Mulford Robinson read a paper on Cities of the Present as Representative of a Transitive Period in Urban Development—The Evidence of Standardizing Streets. He said that the town of the past was the city of the present, and that the old street plan would not persist. So fundamental was the platting of streets that no other merits of the modern city could attain for shortcomings there. The modernness of the problem should be considered, and it should be approached with unprejudiced freedom and common sense. G. L. Pepler presented a paper on the Development of Greater London. He suggested a gridle road to follow as much as possible open country and easy grades at a radius of about 10 miles from the center of the city. This would provide a means by which a great deal of traffic could circle the city instead of passing through. He advocated the purchase of a strip of land a quarter of a mile wide for the whole length of the road, about 60 miles. The profit on the transaction would go a long way towards paying the expense. W. E. Riley, speaking on City Development and Extension, said that while Paris had 42 roads radiating into the surrounding country, London, with a population twice as large, had only 20. Paris had 102 miles of streets 98 feet or more wide, London had only 8½ miles of all streets of that width. The most pressing need of London was to establish the main arterial communication on a large and courageous scale, to provide for the expansion of the next few decades. Papers were read on Recent Progress in German Town Planning and the Greater Berlin Competition. Sir Gilbert Parker spoke on Open Spaces, Gardens and Recreation Grounds, and Thomas H. Mancon discussed the question of Design of Public Parks. Colonel Plunkett, in a paper on Open Spaces and Running Waters, spoke of the importance of preserving narrow strips running away into the country, especially if they included a running stream. Cities of the Future were treated of in a number of papers on the last day of the conference, the authors being Professor C. H. Reilly, Eugene Hénard, L. Cope Cornford. At the close of the meetings excursions were made to Port Sunlight, Bournville, Bait, Oxford and Cambridge.

Massachusetts Fire Chiefs' Club—Many Fire Chiefs of Rhode Island, New Hampshire and other States were guests of the Massachusetts Fire Chiefs' Club, which met at Attleboro, Mass., October 20, to dedicate two new fire houses recently put in commission in that town. Despite unfavorable weather the program was successfully carried out. The chiefs assembled in Odd Fellows' Hall, where lunch was served. Shortly before 1 o'clock there was a demonstration of a big stationary nozzle, attached to a wagon and discharging from two lines of hose. At 1 o'clock the chiefs were taken about town in automobiles, and were shown through several jewelry factories. About thirty automobiles were furnished. At 2 o'clock the chiefs assembled at the new South Main street fire house, which went into commission Labor Day. This building was erected at an expense of $38,000, and is one of the finest houses in the State. The committee in charge of it included: George A. Sweeney, George M. Worrall, Hiram R. Packard, Edward A. Sweeney, James E. Blake and Harold E. Sweet. The plans were drawn after the committee inspected several houses in and about Boston. The exterior is of buff brick with sandstone trimmings. It is a three-way house, but contains only two companies at the present time, Hose 1 and Hook and Ladder 3. The main floor of the house has places for three pieces of apparatus, and in the rear are stalls for the horses. The side walls are of handsome tile and the ceiling is painted white. The room also contains a big switchboard for the fire alarm and other electrical apparatus. The second floor contains sleeping rooms, chief's office, reading room, library, etc. In the rear of the building is a high tower for drying hose. Olstin M. Higgins, of Attleboro, was the architect and Malcrom Currie the contractor.

Following an inspection of the house the delegates were taken to South Attleboro, where they inspected the South Attleboro house, which will cost, when finished, $15,000. This is a brick house, with room for two companies. It will be finished in about a month. Contractor George R. Humes has the contract, and the architect is O. M. Higgins.

Returning from their inspection of the fire houses, the chiefs assembled in Odd Fellows' Hall, where dinner was served at 3:30 o'clock. Chief John A. Mullen, of the Boston Fire Department, President of the Chiefs' Club, was the master of ceremonies. The gathering included chiefs from all the principal Massachusetts cities, Providence, Pawtucket, Nashua, and other New Hampshire cities, and guests from New Jersey. About 100 were served at the dinner.

A few special guests from Attleboro were present, including the town Board of Engineers, the committees in charge of both fire houses, representing the town, ex-Senator Thomas W. Williams, the Water Commissioners, and four ex-chiefs of the Attleboro fire department: Daniel H. Smith, Nahum Perry, Benjamin P. King and A. T. Wales. Chief Hiram R. Packard, of the Attleboro department, and Edward A. Sweeney were in charge of the entertainment of the guests.

Ohio State Board of Health Conference—A large delegation from cities and villages in Ohio was present October 20 at the twelfth conference of the Ohio State Board of Health, it also being the twenty-eighth conference of the Ohio Boards of Health. The meeting took place in the convention hall of the Sinton Hotel, and was presided over by William T. Miller, M.D., of Cleveland. Sitting with Dr. Miller were Dr. Frank Warner of Columbus; Dr. Josiah Hartzell, of Canton; Dr. J. C. Crossland, of Zanesville, and John W. Hill, of Cincinnati. Dr. C. O. Probst was secretary. The meeting was opened formally in the afternoon by Dr. Miller, who introduced Mayor Schwab, who, as a physician, is deeply interested in the objects of the meeting and volunteered the assistance of the civic authorities to uphold the board in all its contentions. In the afternoon session the following addresses were made: "Public Water Supplies," John W. Hill; "A National Department of Health," Dr. C. A. L. Reed, of Cincinnati; "Past, Present and Future of the Ohio River from a Sanitary Standpoint," Dr. S. C. Swartzel, of Cincinnati; "The Control of Contagious and Infectious Diseases," Dr. Frank Warner, of Columbus. In the evening the milk problem was taken up and argued in its every phase by Dr. Frank Lamb, bacteriologist and chemist in the Cincinnati health department; Dr. McKendree Smith, of Grandview Heights; Dr. J. H. Landis, health officer of Cincinnati; Dr. H. W. Behmyer, of Mount Washington, and Dr. Frank E. Adams, of Piqua. The addition of a number of moving pictures by the Magnetic Film Service Company, showing the modern methods of milking, and the fly as a propagator of disease, added a touch of novelty to the meeting. Whether or not the hog should be driven from the villages and towns of Ohio was discussed at length. At the concluding session the question was brought before the gathering by Dr. C. O. Probst, of Columbus, the secretary of the organization, who suggested that one cause for the present high cost of living came from the action of many State boards of health in driving the hogs from the small towns and villages. A vote was called for, and those in favor of allowing the "porkers" to live in the small towns were victorious by a narrow margin. Medical inspection of school children and inspection of schoolhouses was another question that resulted in a lengthy discussion. A paper on the abatement of nuisances was read by Dr. Probst. There were about 420 delegates in attendance at the conference, and it was one of the most successful ever held.

Illuminating Engineering Society—The fourth annual convention opened at McCoy Hall, Johns Hopkins University, Baltimore, Md., October 24. Mayor J. Barry Mahool delivered the address of welcome. The most interesting paper to municipal authorities was that by Preston S. Millar, on Neglected Considerations Pertaining to Street Lighting. The author directed attention to the effect of street surface on the lighting. This varies immensely with the nature and conditions of the street surface. He mentioned the condition on upper Seventh avenue, New York, where the polishing of the surface was such that the images of distant street lights appeared as points of light on the pavement. The opposite extreme is found in macadam roads treated with bitumen or where there is scarcely any reflection. The latter type of roads are difficult to light. This paper led to considerable discussion, some speakers expressing the opinion that the author dealt with exceptional conditions.

American Gas Institute—The fifth annual meeting was held at the United Engineering Societies Building, New York City, October 19-20. Most of the papers concerned technical matters connected with the manufacture of gas. Public utility questions, however, were dealt with in three papers. President A. C. Humphreys, Stevens Institute, read a paper under the title of The Public Deceived by Faulty Data and Misleading Analysis of Data. He said that statements made by every corporation should be published in a form that would convey a clear and explicit meaning as to status and earnings. It was intimated that Public Service Commissions were issuing distorted information and misleading analyses. He said that the "fair return" on investment which commissions have sought was only a minimum and that more reward was necessary for continued investment. A. E. Forstall, New York, presented a paper on a Review of Recent Decisions of Public Service Commissions Affecting Gas Companies. He noted that there was a general refusal to allow competition where regulated monopoly could be shown to be better. This was tempered, however, by permitting competition where one concern's service was continually poor or where a company not enjoying public good will did not have great capitalized expenditures engendered thereby. The issue of securities was apt to be sanctioned only for the acquisition of property, for installation, extension and improvement of plant and service, and for the discharge and refunding of obligations. Such specific ends as payment of dividends, excessive bond commissions, temporary deficits and expenditures for property not directly useful in the business were not being offered as grounds for security issues. In the matter of rates, the tendency was to make them so as to allow a fair return on the value of the plant, a reasonable operating cost and depreciation. The tendency was not to value a franchise of a public utility monopoly beyond its actual cost. "Going value" was becoming regarded as the cost of building up the business, added to the value of physical plant. The profit reward above ordinary interest rates had been fixed in the case of one water company as 1 per cent, and for a gas company 1½ per cent, making the total return on the property 7 and 7½ per cent respectively. The question of friendly relations between the public and the utility corporation was also treated of.

Ohio River Sanitary Commission—A meeting was held in Columbus, O., October 18, at which were discussed forms of legislation desired at the hands of the Ohio Assembly to protect the users of Ohio River water against the pollution of the river. Later, in November, the Ohio commission will meet with similar commissions from Indiana, West Virginia, Kentucky and Pennsylvania, with a view to framing up uniform legislation for all the States with respect to this matter.

City Planning Conference of the Southwest—The first City Planning Conference for the Southwest will meet in Los Angeles November 14 to 16, to which all towns and cities are asked to send delegates, including also all individuals who are especially interested in this important subject. The program will consist of discussions and papers regarding the best methods of developing both the City Beautiful and the City Practical. There will also be an exhibit of charts, books, pictures, etc. Architects, promoters, concrete men, landscape architects, and all experts and specialists in city planning who have ideas or plans concerning the building of inexpensive homes for the poor, or the laying out of garden villages or industrial sites, residential districts or any other part of city planning, are asked to communicate with Dana W. Bartlett, 618 New High street, Los Angeles, Cal., in order that the very latest and best thoughts may be brought out at this conference. Delegates to the League of California Municipalities, meeting in San Diego, November 16-19, are invited to attend this conference, while those in attendance at the Los Angeles meeting will be asked to attend the League meeting following.

Calendar of Meetings

November 14-18.
National Municipal League.—Annual Meeting, Buffalo, N. Y.—Clinton Rogers Woodruff, Secretary, North American Building, Philadelphia, Pa.

November 17-19.
National Society for the Promotion of Industrial Education.—Annual Convention, Boston, Mass.—James C. Monaghan, Secretary, 20 West 44th St., New York, N. Y.

November 21-23.
City Commission Congress.—Meeting, Galveston, Tex.—R. E. L. Giles, Secretary, Galveston, Tex.

December 6-9.
American Society of Mechanical Engineers.—Annual Meeting, New York, N. Y.—C. W. Rice, Secretary, 27 West 39th St., New York, N. Y.

December 12-14.
Association of American Portland Cement Manufacturers.—Annual Convention, New York, N. Y.—Percy H. Wilson, Secretary, Land Title Building, Philadelphia, Pa.

December 12-23.
National Association of Cement Users.—Annual Convention, New York, N. Y.—Richard L. Humphrey, President, Harrison Building, Philadelphia.

December 23.
New Jersey Sanitary Association.—Annual Meeting, Lakewood, N. J.—J. A. Exton Secretary, 75 Beech Street, Arlington, N. J.

December 27.
American Association for the Advancement of Science.—Annual Meeting, St. Paul, Minn.—L. O. Howard, Secretary, Smithsonian Institute, Washington, D. C.

February 1-3.
Nebraska Cement Association.—Western Cement Exposition, Omaha, Neb.—Peter Palmer, Secretary, Oakland, Neb.

May 29.
American Water Works Association.—Annual Convention, Rochester, N. Y.—J. M. Diven, 14 George St., Charleston, S. C.

PERSONALS

ALEXANDER, J. R. H., Mayor of Leesburg, Va., and a prominent attorney, was married on November 2 at Springwood, Va., to Miss Cora Lutz, daughter of Mr. and Mrs. S. S. Lutz, of that place.

BENNETT, J. WALTER, Secretary to the Department of Water Supply, Gas and Electricity, New York City, has been named as the temporary successor of Prof. Edward W. Bemis as Deputy Commissioner of the Department.

CLAYTON, CAPT. R. M., City Engineer of Atlanta, Ga., has been elected Chief of Construction of the city, a new office created by the merging of the two offices of City Engineer and Superintendent of Public Works; his opponent was Henry L. Collier, now Superintendent of Public Works.

COLE, HOWARD J., Street Commissioner of Morristown, N. J., has resigned in order to take charge of engineering work on the Ohio River for a New York concern.

CRAVEN, ALFRED, New York, N. Y., has been appointed by the Public Service Commission as engineer in charge of subway inspection to succeed George S. Rice, who recently resigned; he has been deputy engineer and by the promotion his salary is increased from $7,500 to $10,000 a year.

DALIER, B., City Engineer of White Castle, La., for many years, has resigned, and is succeeded by Special Night Officer V. L. Usey.

GEIGER, H. A., Mendenhall, Miss., has been elected Mayor, with the following as members of the Board of Aldermen: T. F. Gross, J. W. Pickering, R. E. Giles, A. H. Mangum, and W. I. Easterlin.

HAMILTON, JAMES A., Chief of the Fire Department of Lawrence, Mass., has been convicted of bribery in connection with securing his position, and sentenced to State's Prison at Charleston for from two and one-half to four years, and has entered upon his term; Former Mayor William P. White is serving five years in connection with irregularities in office, and other city officials are yet to be tried.

HARSH, DR. F. R., Birmingham, Ala., has been elected City Meat and Milk Inspector of Mobile, to succeed Dr. Peterson, and plans to evolve at once an effective system of inspection.

HEILMAN, CHARLES F., Mayor of Evansville, Ind., with President John Jack and member Matt Bray, of the Board of Water Works, and Superintendent J. W. Peck, are making a tour of eastern cities for the purpose of examining pumping machinery.

MACREADIE, WILLIAM, First Assistant Engineer of the Fire Department of Lawrence, Mass., has been named as Acting Chief until a successor to Chief James A. Hamilton, removed from the Department, as stated above, is chosen, and will devote his entire time to the office and receive the pay of Chief Engineer.

SCALES, HENRY M., Mayor of Oklahoma City, Okla., for three years and a half, has resigned, in order to devote his entire attention to his business interests, and Dan V. Lackey, President of the City Council, is Acting Mayor.

TALBOTT, I. F., Mayor of McPherson, Kan., has resigned, and J. Arthur Davis, President of the City Council, has assumed the office of Acting Mayor.

WINN, COURTLAND S., Atlanta, Ga., has been elected Mayor, over James G. Woodward, who was Mayor some years ago; Walter Taylor, a newspaper man, defeated City Clerk Press Huddleston for re-election.

TRADE NOTES

Cast-Iron Pipe — Chicago: Detroit is the only city that has come into the market thus far with specifications for any large tonnage of water pipe for winter shipment. Any improvement in the local market would bring out a large amount of business. Quotations: 4-inch, $27; 6 to 12-inch, $26; 16-inch and up, $25. Birmingham: No inducements are being made to get large orders, as there is said to be no profit in pipe at present prices. Quotations: 4 to 6-inch, $22; 8 to 12-inch, $21; over 12-inch, $20. New York: The demand for next year is becoming more pronounced. Quotations: 6-inch, carloads, $22.50 to $23.50.

Lead—Market is firmer and demand good. Quotations: New York, 4.40c.; St. Louis, 4.275c.

Asphalt Macadam—The Trinidad Lake Asphalt Paving Company, Limited, has been laying Trinidad asphalt macadam at Kingston Vale on the main road from London to Kingston, England. It is similar to a stretch of 25,000 square yards on the Victoria Embankment which was laid four years ago and has given complete satisfaction. The aggregate consists of broken granite, limestone slag, clinker, etc., of varying sizes from ⅜ in. to 2 ins. A sealing coat of specially prepared refined Trinidad Lake bitumen is applied by squeegees after the rolling, and a sprinkling of fine ¼-in. granite chippings completes the finished surface. The pavement is laid to a depth of 3 in. upon the old macadam roadbed.

Cleveland Industrial Development—With the object of securing new industrial enterprises for Cleveland 29 members of the Cleveland Chamber of Commerce, headed by D. T. Croxton, President of the Cleveland Furnace Company, have banded themselves together as a Committee on Industrial Development. This committee will make special efforts to secure plants in the city for the manufacture of products largely used there, but manufactured there only in a small way, if at all. The committee has found that the following products are not made in the city at all or only in small quantities, not sufficient to supply the local demand: Radiators, structural steel, tool steel, sheet copper, light boilers, light engines, manganese and vanadium steel castings, large valves and fittings.

Mechanical Filtration—Work on the new filter plant now in course of construction by the New York Continental Jewell Filtration Company at the Bangor, Me., water works is progressing finely, and it is now expected that the plant will be completed in January, the time stipulated in the contract. All of the concrete work, which is the main part of the construction, will be completed by November 10. One of the largest pieces of work done was the installing of a 30-inch main under both the Maine Central Railroad and Bangor Railway & Electric Company's tracks. This pipe extends from the old clear water basin to the new plant and is about 52 feet in length and under 15 feet of earth. H. G. Hunter, construction engineer of the company, is in charge.

Pumps—The Canton-Hughes Pump Company, Canton, Ohio, is installing a 6,000,000 gal. pumping engine at Bloomington, Ill., the contract having been taken in competition with the leading builders of such engines.

Hydrocarbon Industry—One of the new factories west of the Missouri in which hydrocarbons are converted into waterproofing material and into compounds suitable for use in connection with pure rubber in making rubber tires for automobiles, bicycles and motorcycles is to be built in Denver, Col. A group of capitalists organized the Protecto Hydrocarbon Company, which has filed articles of incorporation with a capital of $100,000. Offices have been opened in the First National Bank Building. A. L. Kintner will manage the concern. The new company has secured ground to supply an inexhaustible independent supply of hydrocarbons in this state and in Utah, where the deposits are now yielding approximately 100,000 tons each year.

Colorado Portland Cement—Colorado will this year produce more than 1,000,000 barrels of Portland cement, worth in the retail market nearly $1,750,000. This is an increase in value of approximately $1,000,000 and is significant of the fact that after a very "lean" year the manufacturers are indulging in a season of prosperity. The growth of the industry in the State is attributed by home producers to the increased use of cement in the building trades, to large street and road improvements and to construction of bridges and irrigation works of concrete in which cement is the most important factor. The plants now have railroad facilities so favorable that they are able to compete in the entire western and northwestern territory, Colorado cement finding ready sale even as far north as Vancouver, British Columbia, and as far south as Mexico.

Landscape Construction—John Freudenberger, Dayton, Ohio, landscape architect, is consulting landscape architect for the Chalmers Motor Company, Detroit, Mich., superintendent of landscape construction Ohio State Sanitarium at Mt. Vernon, and has contracts with some of the leading factories of Detroit and private parties for the extension of landscape work on their grounds.

Filbertine for Railroad Tracks—P. E. Hurley, general manager of the Trenton Street Railway Company, has used Filbertine extensively in track work, with satisfactory results, as shown by the following letter:

Trenton, N. J., Oct. 21st, 1910.

Mr. R. E. Ross,
Pennsylvania Building,
Philadelphia, Pa.

My dear Sir: In answer to your inquiry, I beg leave to say that I have been with the Trenton Street Railway Company for twenty-seven years and my experience in all kinds of pavements has been very, very large.

A few years ago we adopted Filbertine for our pavement between the tracks and it has given us such wonderful satisfaction that I can assure you that there will be no other pavement used in the city of Trenton except Filbertine.

We have at the present time three contracts awarded to the Filbert Paving & Construction Company for putting down Filbertine between our tracks.

In my mind Filbertine is the coming pavement. It is both dustless and absolutely waterproof, non-slippery, and the many miles that we have down in Trenton at the present time look good for twenty years.

Hoping that the above will be satisfactory, I am

Respectfully yours,
PETER E. HURLEY.

Double Acting Piston Pump—A compact horizontal double acting power pump that is simple, durable and efficient, the Goulds Mfg. Company, Seneca Falls, N. Y., claims to have in the new Pyramid pump, which is an evolution from the original pump of the same name. This pump is designed for pumping of almost any kind where the pressure does not exceed 75 pounds, or the delivery head 175 feet. Among the special fields in which it may be properly used are general water supply, including tank pumping for farms, country estates and railroad water tanks, irrigation, handling light oils, kerosene and gasoline, and for spraying trees. It is specially adapted for furnishing a large and constant supply of water for farms and country estates, and small gas or gasoline engines or electric motors are recommended as driving means. The design follows in a general way the same lines as the earlier model, but it is more compact, its general construction more rugged, and the efficiency has been greatly increased. Its overall dimensions are said to be smaller than those of any other pump of the same capacity and strength and the general construction combines ample power and large capacity in a very compact form. Another noteworthy change is the increased size and more directness of the waterways.

Cast Iron Pipe.—The Illinois Cast Iron Pipe & Foundry Company, 803 Great Northern Building, Chicago, recently incorporated with $2,000 capital stock, has increased this amount to $175,000 and will issue $250,000 in six per cent. bonds. The plant of the company will be built at Chicago Heights, where it has purchased fifteen acres of land. The main building will be 132 x 480 feet, and will be constructed on the most improved lines for the economical and effective manufacture of cast iron pipe and specials. The plant will have a capacity of approximately 40,000 tons annually and will be ready for operation in the fall of 1911. Although the actual work of construction will not be commenced until spring, it is understood that in the meantime contracts will be placed for all necessary equipment. The enterprise is being managed by A. M. Ozburn, the president of the company, who has been identified with the business for the past fifteen years and is well known to the trade throughout the West.

Corrugated Iron Culverts—By reason of the growing demand for its products, the Virginia Metal Culvert Co., Roanoke, Va., has found it necessary to increase the capacity of its plant several times, and has but recently completed an addition increasing its capacity 100 per cent. more than it was last year. Modern machinery has been installed, and the company is considering further enlargements by adding new features to some lines of its present manufacture. It reports a rapidly growing trade and is compelled to work a force of two shifts in order to keep up with its orders.

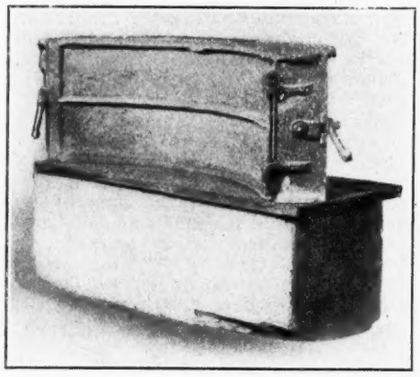
Rock Crushers—The Corona Rock Company, Corona, Cal., is preparing to install three large crushers. A new air compressor and several compressed air drills will also be added.

Power Equipment—The Erie City Iron Works, Erie, Pa., has been awarded the contract for a 115-hp. four-valve engine, 24-in. single-suction volute pump and surface condenser, to be installed in the municipal power and pumping station at Jacksonville, Ill.

MUNICIPAL APPLIANCES

Reinforced Concrete Block Sewers

The Parmley Reinforced Segmental Pipe sewers are built of concrete, segments or blocks, thoroughly hardened before laying. They are reinforced in rabbeted form of joints as they are built in place in trench. Reinforcement is also embedded in the blocks. Each segment is set in full beds and joints of Portland cement mortar, or joints thoroughly filled with Portland cement grout. Joints are easily made water tight. The bottom segments are made with a flattened base, which gives the sewer a firm, stable bearing on the bottom of the trench. This shape is specially valuable in wet trenches, as it permits the segments to be built upon a plank laid in bottom of trench on the soft ground. Segmental construction permits the backfilling to be made immediately, the only precaution being to thoroughly secure the sides with well-tamped earth before filling in the trench. Narrower ditch, it is claimed, is required than by any other form of sewer, the saving in volume of excavation at times being from 25 to 30 per cent less than required for pipe sewers. Density and impermeability is the maximum that it is possible to get with concrete construction, tests showing the actual absorption of water in forty-eight hours to run as low as 1½ per cent by weight. Each segment is made in accurate cast-iron molds, the amount of water used being right to produce the best results, the concrete being neither the "dry concrete" nor the sloppy concrete so often used. The amount of steel reinforcement may be modified to meet the widest variations of conditions The inventor and owner of the patent covering the system is Walter C. Parmley, Everett Building, Union Square, New York City.



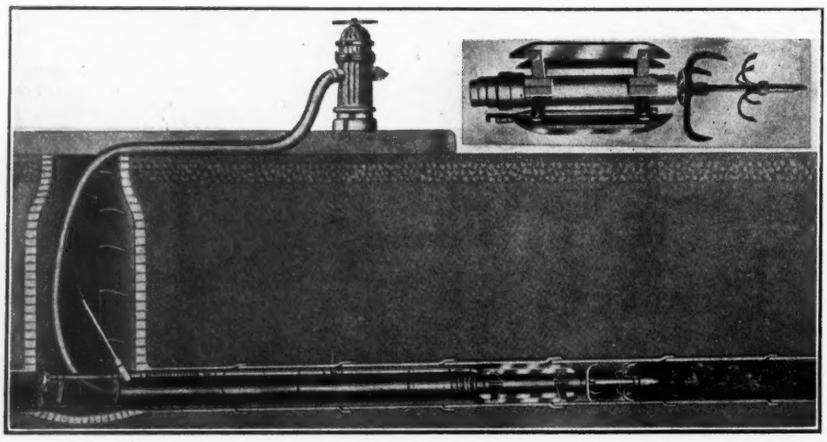
MOLD FOR MAKING PARMLEY SEWER BLOCKS

SECTION OF REINFORCED CONCRETE SEWER BUILT WITH PARMLEY BLOCKS

Steel Bars

The Buffalo Steel Company, Tonawanda, N. Y., manufactures steel bars of high elasticity—limit 50,000 pounds or more per square inch—for concrete reinforcement. The shapes are plain, round, square, flat, twisted and spiral. The spiral bar is patented by the company and is claimed to have special merit, though sold for the same price as the twisted square. In the process of manufacture the twisting is done as the finished bars come from the rolls. Enough heat remains to allow the full mechanical effect of twisting without destroying the homogeneity of the steel.

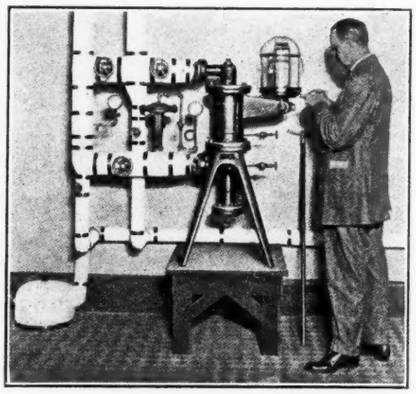
SPECIAL REINFORCING BAR



SIEBEN SEWER CLEANER AND ONE METHOD OF OPERATION

Steam Meter

The Richmond indicating and recording steam meter, made by the McCrum-Howell Co., Park avenue and 41st street, New York, indicates the amount of steam used during any period of time. It shows the total quantity of steam used during any one hour, day or month, which facts are recorded on a chart that may be filed for future reference. The meter measures both live steam and exhaust steam. It measures the quantity of steam flowing through it at all pressures and under varying loads, thus making possible the most accurate tests.



METER FOR MEASURING STEAM

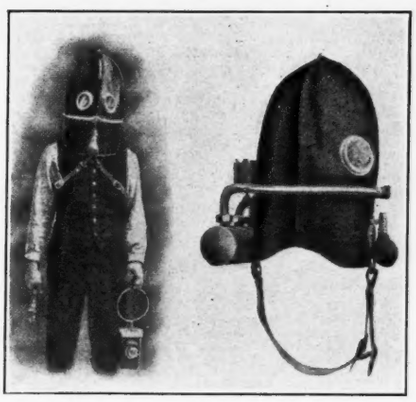
Sieben Sewer Cleaner

The Sieben Sewer Cleaner is so constructed that it will meet all the requirements to clean stopped up and unsanitary sewers. When this cleaner is connected with the hose with a water pressure of 60 lbs. behind same, the machine generates 3 h. p. at the turbine, revolving the cutter blades and brushes so same will dislodge the matter in the sewer, grinding it into a grout and cutting the weeds and roots and allowing the matter to flow off with the disinfected water, which passes through the cartridge inserted inside of the machine, which is filled with a chemical preparation, then passing through the turbine, there generating the power that rotates the cutters and brushed in such a manner that every part of the inside of the sewer is thoroughly cleaned, scrubbed and disinfected.

The illustration herewith shows the mode of operating the Sieben sewer cleaning system when the sewer pipe is completely stopped up so it is impossible to run cord or cable through it. When these conditions exist the machine is inserted into the manhole at the low end of the sewer attached to the hose and water plug, and with the water pressure the machine is allowed to work for a few minutes, in this manner cutting the matter out ahead of the machine. The machine under these conditions is connected with the Sieben special coupling rods attached to the Sieben forcing jack, which, by the operation of the handles, forces the machine ahead as far as it has cleaned while in a stationary position. The matter cleaned in this way is ground up into a grout and together with the water is allowed to flow back past the machine and is carried away, leaving the sewer in a clean and sanitary condition.

Smoke Helmet

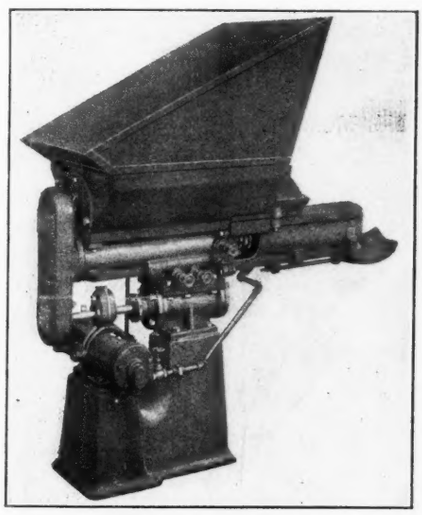
THE Everready smoke helmet, made by the Servus Rescue Equipment Co., Newark, N. J., is claimed to be an absolutely safe, practical and efficient head protector that is impervious to smoke or gas of any description. The air in the helmet is kept pure and cool, free from carbonic acid and rich in oxygen, automatically, by the passing of the air through chemical oxygen, when exhaled and inhaled. There is no pumping of air or any high pressure gauges or valves to become out of order or watch, nor are there any rubber parts to deteriorate when not in use, or any wool to cause undue perspiration. To recharge the apparatus a new cartridge is simply inserted in the purifying chamber. These cartridges are standard. The helmets are made tight around the neck by a flexible steel spring, and are constructed of calf skin with a reinforced steel frame. The apparatus will not deteriorate in any way by standing.



EVERREADY FIREMAN'S SMOKE HELMET

Erie Stoker

THE Erie Stoker is of the overfeed plunger or shovel type. It consists of the following essential parts: A coal hopper with opening in the bottom at the end nearest the boiler; a conveyor for agitating or carrying the coal from the rear of the hopper to the opening at the front of the hopper, where it falls by gravity in front of the plunger, thus assuring a uniform delivery of fuel; a main cylinder and trough in which reciprocates a piston and plunger, which, with a variable stroke, throw the coal to the different parts of the fire box. This variable stroke is given to the plunger by means of a rotary valve, three separate steam ports leading from this valve to the rear end of the cylinder, and three choke plugs, one for each of the steam ports. The office of the three choke plugs is to vary the amount of steam reaching the rear end of the cylinder through the various ports, and thereby give a variable stroke to the plunger. The valve operates in a rotary manner, each of the ports stopping full open in front of its corresponding steam passage in regular succession. By choking down the steam with the choke plug nearest the rear of the stoker until the port is almost closed, there is obtained a very light stroke of the plunger, thereby distributing the coal over the grate near the fire door. The other two choke plugs operate in the same manner, each taking its respective turn. They are adjusted so that more steam is admitted on the second stroke than on the first, thus distributing coal over the middle portion of the grate and more steam is admitted on the third stroke than on the second, thereby scattering the coal over the rear end of the grate. By this adjustment of the choke plugs any arrangement of distribution can be obtained that may be desired.



AUTOMATIC STOKER

The conveyor is controlled by a small reciprocating steam motor which also operates the valve that controls the speed of the piston or plunger, thus giving a uniform amount of coal for each stroke of the plunger.

The deflector, which is attached to the front of the trough is so designed as to spread the coal to the sides of the furnace as it is delivered by the plunger. This deflector for spreading each charge of coal over the fire box, is the only part of the stoker exposed to the fire, and is protected by the exhaust steam from the stoker passing under it. The stoker is located entirely outside of the fire box and no portion of it except the deflector is exposed to the effects of heat.

Standard Slag or Gravel Roofing

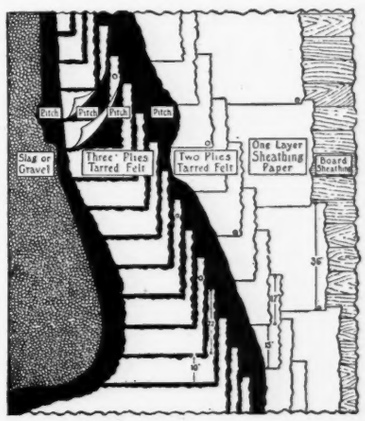
THE following specification for laying slag or gravel roofing over boards are included in a booklet of other specifications and information published by the Barrett Manufacturing Co., New York:

First—Lay one thickness of sheathing paper or unsaturated felt weighing not less than 5 pounds per 100 square feet, lapping the sheets at least one inch.

Second—Lay 2 plies of specification tarred felt weighing 14 to 16 pounds per 100 square feet, lapping each sheet 17 inches over preceding one, and nail as often as is necessary to hold in place until remaining felt is laid.

Third—Coat the entire surface uniformly with specification pitch.

Fourth—Lay 3 plies of specification tarred felt, lapping each sheet 22 inches over the preceding one, mopping with specification pitch the full 22 inches on each sheet, so that in no place shall felt touch felt. Such nailing as is necessary shall be done so that all nails will be covered by not less than 2 plies of felt.



CONSTRUCTION OF STANDARD TAR ROOF

Fifth—Spread over the entire surface a uniform coating of specification pitch, into which, while hot, imbed not less than 400 pounds of gravel or 300 pounds of slag to each 100 square feet. The gravel or slag shall be from ¼ to ⅝-inch in size, dry and free from dirt.

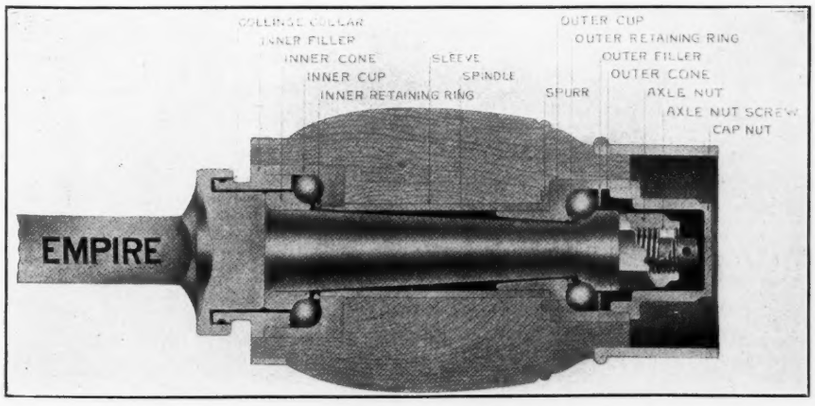
Flashings—Flashings shall be constructed as shown in detailed drawings.

Labels—All felt and pitch shall bear the manufacturer's label.

Inspection—The roof may be inspected before the gravel or slag is applied by cutting a slit not less than 3 feet long at right angle to the way the felt is laid.

Empire Ball-Bearing Axle

By the use of the Empire ball-bearing axle, made by the Sheldon Axle Company, Wilkesbarre, Pa., it is claimed that a team capable of drawing 2½ tons on a plain axle can draw 6 to 7 tons. The axles effect an appreciable economy in fire apparatus, as a team can draw a piece of apparatus for which a three-horse hitch would otherwise be required. The working parts are water and dust proof, so that hot boxes are impossible. There is no wear on the axle itself. The parts subject to wear are alloy chrome vanadium steel, as hard as glass, and can be easily replaced if broken by accident. Examination and oiling every six months on wagons in use ten hours per day is ample. Axle spindles are all made one size, heavier than axle beds. Details of construction are shown in the illustration.



BALL BEARING AXLE FOR FIRE APPARATUS AND HEAVY WAGONS

BOOK REVIEWS

Sewage Disposal. By Leonard P. Kinnicutt, C. E. A. Winslow and R. Winthrop Pratt. 8vo, 421 pages, cloth. John Wiley & Sons, New York City. Price $3.

This is the first American book devoted exclusively to sewage disposal which has attempted to cover the entire field since the publication of Rafter and Baker's book on "Sewage Disposal," which was, to a large extent, a description of the few plants then in service in this country. A work by Venable, published in 1908, dealt with the methods and devices for bacterial treatment of sewage, but only incidentally with the principles involved. There have been a number of English works, by Rideal, Dibdin, Barwise, Fowler and others, and these have been the chief sources of information available to American engineers and sanitarians other than articles in the technical press and more or less extensive portions of works on sewerage generally, notably that entitled "Sewerage," by Folwell.

The authors will be recognized as authorities of high standing in this country, the first being professor of sanitary chemistry in the Worcester Polytechnical Institute and consulting chemist of the Connecticut State Sewerage Commission; Mr. Winslow being biologist in charge of the sanitary research laboratory and sewage experiment station of the Massachusetts Institute of Technology, and Mr. Pratt being chief engineer of the Ohio State Board of Health and, during the past year, Director of Sanitary Engineering of the Republic of Cuba. Each of these gentlemen has written quite extensively on the subject of sewage disposal, and their investigations and writings have done much toward the scientific progress of the art in this country. It has consequently been with considerable interest that sanitarians have awaited the publication of this book, and, as is not always the case with books whose authors have a high repute, the work is not disappointing. It covers practically the entire field of sewage disposal and will undoubtedly serve as a reference work for some time to come for all engaged in the designing of sewage disposal plants.

The method of treating the subject and the field covered is well indicated by the chapter headings, which are as follows: Composition of Sewage; Disposal of Sewage by Dilution; Screening and Straining of Sewage; Preliminary Treatment of Sewage by Sedimentation; Preliminary Treatment of Sewage by Chemical Precipitation; Preliminary Treatment of Sewage by the Septic Process; Disposal of Sewage Sludge; Purification of Sewage by Broad Irrigation and Sewage Farming; Purification of Sewage by Intermittent Filtration Through Sand; Purification of Sewage in Contact Beds; Purification of Sewage on Trickling or Percolating Beds; Disinfection of Sewage and Sewage Effluents; Analysis of Sewage and Sewage Effluents. Each of the first five subjects occupies practically 20 pages; the septic process 58 pages; disposal of sludge, 25 pages; broad irrigation, 28 pages; intermittent filtration, 42 pages; contact beds, 48 pages; trickling filters, 60 pages; disinfection, 18 pages, and analysis, 15 pages. The book is unusually well illustrated for one of its character, and if there is any criticism in this respect it is that the matter of photographic illustration is somewhat over done, several of the illustrations being general views which are too comprehensive to show details. However, these views do give general ideas of superficial parts which may have their value and are at least interesting. There are altogether 113 illustrations.

One excellent feature of the work is that little space is taken up with historical matter or the describing of methods or appliances which are no longer recommended by the leading sanitary authorities; but all the matter is of actual practical use to the sanitarian or engineer. While the authors are Americans and their experience and knowledge covers practically everything which has been done in the sewage purification line in this country, they have not neglected English and German practice, but have combined with American results the lessons learned and conclusions reached by means of the researches and actual applications carried out in those countries. In all of this descriptive matter the authors have very wisely refrained from adopting the easiest course of simply presenting a series of descriptions of individual plants, but have instead described principles and methods, using individual plants or experiments as illustrations or confirmatory of the principles stated.

One of the most interesting chapters to practical sewerage men and superintendents of plants is that on the disposal of sewage sludge. Present indications are that the matter of sludge disposal will become of increasing, rather than decreasing, importance during the next few years, and that much more study should be given to this subject in the United States than has been paid to it so far. As the authors state, "Much less study has been given to the subject of the ultimate disposal of sludge than to any other factor connected with sewage treatment, and how tank sludge should be handled has been more or less ignored by most engineers. Many sewage plants have been constructed admirably adapted to produce sludge and non-putrescible effluents, but without any adequate means for dealing with sludge amounting, according to the method used, to from five to thirty-five tons for every million gallons of sewage."

The methods described are dumping at sea, air drying, drying in lagoons, running into trenches, mechanical drying, including sludge pressing and centrifugal dryers, and using dry sludge as a fertilizer, burying it in land and burning it in destructors. Destructive distillation also is considered.

Whether it was intentional or not, the inclusion among the authors of an engineer whose experience has been largely, if not wholly, in the middle section of the country where there are few large bodies of water for receiving sewage and many of the towns and cities are distant from any stream at all, and where sand for filters is very scarce and correspondingly costly, has probably had a beneficial effect in lending a balance to the work which has been more or less wanting in most articles and reports emanating from the Massachusetts State Board of Health and other investigators in New England, who have not sufficiently regarded conditions in other sections of the country where intermittent filtration through sand is impractical because of the scarcity of that material.

In this connection it seems to us that the book could be improved, whether it be looked at as a text book for the students in engineering schools or for the use of the general practitioner, by the addition of a chapter giving a general review of the methods and principles described, explaining how the selection of these for individual cases should be governed by the features and conditions attached thereto, and calling attention, especially of the student or young engineer, to the importance of carefully studying the controlling conditions wtih a view to adopting that one of the several methods available which is best adapted to securing maximum efficiency and effective durability at a minimum cost of construction and of operation. It is true that, with a thorough knowledge of the principles expounded, an intelligent engineer should be able to reason out such conclusions, but his time might be considerably saved and his conclusions rendered more accurate by assistance of this kind which could have been given readily by the authors in a few pages.

This shortcoming, if it can be considered such, is, however, one of minor omission rather than of the more serious commission. As a treatise on the subject of modern sewage disposal the book is deserving of nothing but praise.

Domestic Sanitary Engineering and Plumbing. By F. W. Raynes. Octavo, 466 pages. Illustrated, cloth. Longmans, Green & Company, London and New York. Price, $3.00 net.

The sub-title of this book is "Dealing with domestic water supplies, pump and hydraulic ram works, hydraulics, sanitary work, heating by low pressure, hot water, and external plumbing work." The author is head of the plumbing department and assistant lecturer in the Department of Civil Engineering of the Glasgow and West of Scotland Technical College. The scope of the work is further illustrated by the chapter headings, which are as follows: Materials and Their Properties and Mode of Manufacture. Roof Work. Pipe Fixing and Pipe Bending. Pipe Joints. Solders, Fluxes, and Lead Burning. Sanitary Fittings and Accessories. Soil and Waste Pipes. Drainage of Houses and Other Buildings. Disposal and Treatment of Sewage from Mansions and Houses in Country Districts. Water Supply. Appliances for Raising Water. Hydrostatics and Hydraulics. Domestic Hot Water Supply. Low Pressure Hot Water Heating Apparatus. The details of roof work and interior house plumbing would appear to indicate that this work was intended for the use of plumbers, which idea is further borne out by the profusion of details concerning pipes, interior sanitary fittings, methods of making joints, etc. Also by the first chapter which is a condensed statement of the physics of lead, both red and white, tin and tin-covered lead, iron, both wrought and cast, steel, oil paints, bitumens, copper, zinc, brass, pottery, etc. In the detailed instructions for making pipe joints, roof work, etc., much valuable information is given concerning methods of working and errors to be avoided, with "wrinkles" apparently developed by actual experience in plumbing work. We doubt, however, whether the average plumber would make practical use of the formulas, of which there are several score, many of them more or less complicated. Also in the chapter on water supply the questions of sources of supply, collecting areas, artesian wells and chemistry of water would hardly enter into the practice of plumbers, in this country, at least. It may be said, however, that the theoretical part occupies but a small portion of the book, and that the formulas are in most cases practical ones which would be of service to plumbers, or rather, to "sanitary engineers" or experts who really deserve the name of such. The illustrations of actual appliances are of those obtainable in England, many of which could not be exactly duplicated in this country, although their equivalents would generally be obtainable from American manufacturers. Altogether the book would undoubtedly be a valuable one for those engaged in practical plumbing work who wish to understand the theory of domestic sanitation and who would deserve the name, so often misused, of "sanitary expert."

High-Tension Underground Electric Cables. By Henry Floy. Duodecimo, 134 pages. Illustrated, cloth. Electrical Publishing Company, New York. Price, $2.00.

The author in 1908 contributed a series of papers to the "Electrical World" which, rewritten and expanded, have been used to furnish a large part of the material found in this work. The book contains "summaries of experiences, facts and figures, which have been gathered from almost innumerable sources, so that the whole may be said to fairly represent the consensus of present opinions of a majority of engineers acquainted with and practiced in the use of high tension sub-surface transmission. The advantages of underground compared with aerial construction are brought out, followed by a discussion of the dielectrics employed and the present practicable voltage limits attainable with electric underground transmission. Curves, tables and data are presented relative to the heating and testing of cables, as well as formulas to be used in electrical calculations. The book concludes with a chapter on the costs of underground installations with particular reference to the prices of cables."

The author believes in the more general use of underground cables than is at present common. "The only really valid objection that can to-day be urged against the use of underground cables is their relatively high cost as compared with aerial lines, but this objection decreases in almost direct proportion to the increase in the number of circuits installed." One chapter is devoted to naming the advantages of underground cables, among these being safety against lightning, less liability of breakdowns, of extraneous interference, of accidents and interruptions. Dielectrics in ordinary use are described and many practical figures based upon experience are given in connection therewith. The nature, thickness, etc., of the metal used in the cables is discussed in another chapter, a special chapter being devoted to electrical formulas for use in designing cables. One chapter is devoted to the subject of heating and another to the testing of cables.

Ornamental Concrete Without Molds. By A. A. Houghton. Cloth, 5 by 7½, 132 pp. New York. Norman W. Henley Publishing Co. Price $2.

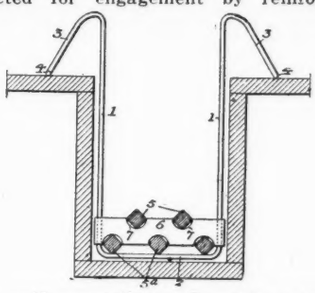
Concrete from Sand Molds. By A. A. Houghton. Cloth, 5 by 7½ inches. New York. Norman W. Henley Publishing Co. Price $2.

These two books by the same author are companions, having the common object of instructing the contractor how to make ornamental work of concrete such as is ordinarily made of expensive cut stone. Concrete ornaments without molds are made by the use of templates which are used to strike off the surplus mortar when soft from rough finished work. This system is applicable to cornices, columns, lawn vases, monuments and the like. The directions contained are in detail and sufficiently clear for any good workman to follow. By the use of sand molds a much greater variety of ornaments may be made; in fact, the scope of this method is practically unlimited. In this class of work the sand for molding is retained in a box. Some fine material, such as clay or talc, may be used to bind the sand together. The molds themselves, of course, have to be made from patterns of wood or metal.

PATENT CLAIMS

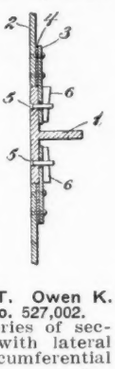
972,961. METALLIC REINFORCEMENT FOR CONCRETE CONSTRUCTION. Daniel A. Wedmore, Philadelphia, Pa., assignor to Philadelphia Steel and Wire Co., Philadelphia, Pa., a Corporation of New Jersey. Serial No. 382,826.

The combination, with a wire stirrup consisting of vertical runs and a cross member integral therewith, of a sheet metal supporting and spacing member constructed for engagement by reinforcing



bars, said supporting and spacing member being vertically disposed and extending between the vertical runs of said stirrup and having its ends turned to form hooks for engagement with said vertical runs.

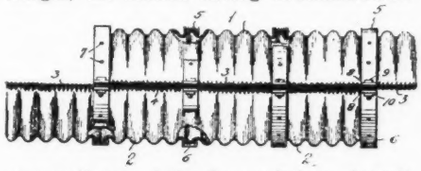
972,802. REMOVABLE SUPPORTING-FORM FOR CONCRETE. Jacob B. Blaw, Pittsburg, Pa., assignor to Blaw Collapsible Steel Centering Company, Pittsburg, Pa., a Corporation of New Jersey. Serial No. 373,732.



A mold or form comprising alternate circumferential stiffening members with inwardly projecting flanges and plates interposed therebetween, strips extending along the vertical edges thereof, and means for detachably securing the strips to the webs of the stiffening members with the outer surfaces of the plates in alignment with the outer surfaces of the webs of the stiffening members.

973,503. METALLIC CULVERT. Owen K. Harry, Dallas, Tex. Serial No. 527,002.

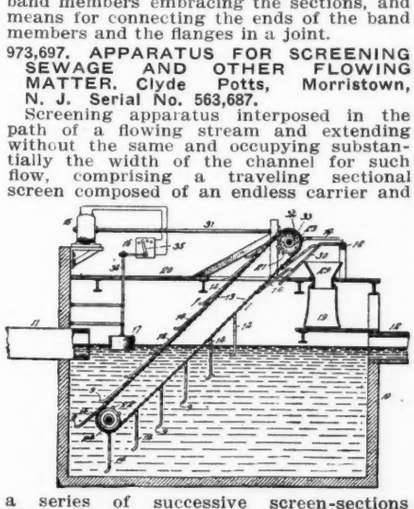
A culvert consisting of a series of sections, each section provided with lateral flanges, the section having circumferential



corrugations and the flanges being crimped, band members embracing the sections, and means for connecting the ends of the band members and the flanges in a joint.

973,697. APPARATUS FOR SCREENING SEWAGE AND OTHER FLOWING MATTER. Clyde Potts, Morristown, N. J. Serial No. 563,687.

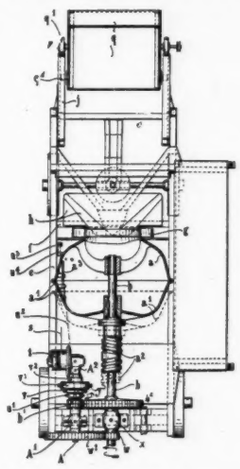
Screening apparatus interposed in the path of a flowing stream and extending without the same and occupying substantially the width of the channel for such flow, comprising a traveling sectional screen composed of an endless carrier and



a series of successive screen-sections hinged at one edge thereto and adapted to swing outwardly therefrom as they successively pass a definite location without the stream, means for driving said carrier, and means for jarring the successive individual screen-sections after they leave the stream and while they are turned outwardly from said carrier; for removing the collected matter from said sections; substantially as set forth.

973,543. CONCRETE-MIXING MACHINE. Jean Müller, Lachen-Vonwyl, near St. Gallen, Switzerland. Serial No. 368,895.

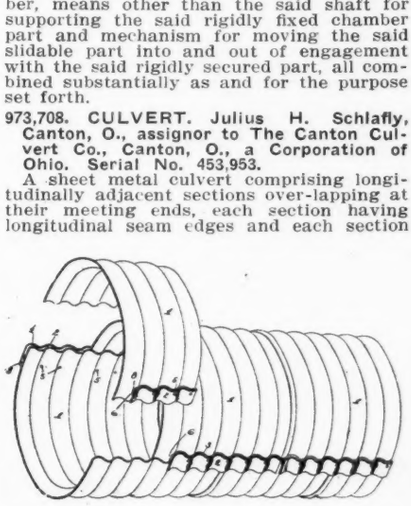
In a mixing apparatus, a driving shaft, a rotary mixing chamber thereon comprising two parts, one of which has a central charge opening and is rigidly and the other slidably secured to the said shaft and one end of which shaft extends through the said slidably secured part and the other terminates inside the rigidly se-



cured part a distance away from the said charge opening, a bearing for supporting the said shaft outside the mixing chamber, means other than the said shaft for supporting the said rigidly fixed chamber part and mechanism for moving the said slidable part into and out of engagement with the said rigidly secured part, all combined substantially as and for the purpose set forth.

973,708. CULVERT. Julius H. Schlafly, Canton, O., assignor to The Canton Culvert Co., Canton, O., a Corporation of Ohio. Serial No. 453,953.

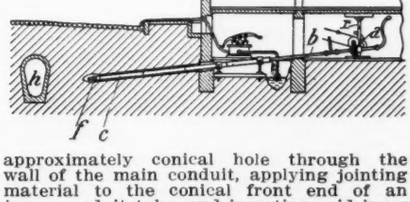
A sheet metal culvert comprising longitudinally adjacent sections over-lapping at their meeting ends, each section having longitudinal seam edges and each section



comprising means for uniting said longitudinal seam edges, and a portion of each section cut away to permit the overlapping of the meeting ends of longitudinally adjacent sections.

973,752. METHOD OF LAYING CONDUITS. Carl Cahn and Eugen Seeberger, Aachen, Germany. Serial No. 533,718.

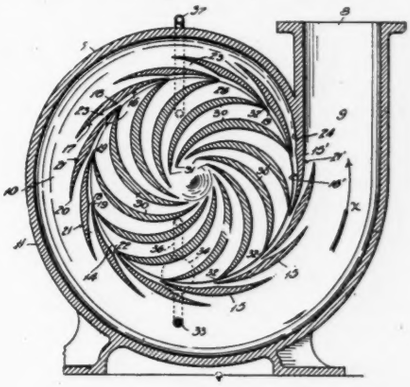
The improved method of laying a branch conduit underground to join a main conduit without opening the ground for the purpose, which consists in boring a passage through the ground for the branch conduit tube, carrying an outer conduit tube along with the boring tool, boring an



approximately conical hole through the wall of the main conduit, applying jointing material to the conical front end of an inner conduit tube, and inserting said inner conduit tube through said outer conduit tube until the conduit front end of the inner conduit tube, provided with jointing material, has entered and become jointed in the conical hole in the wall of the main conduit, as set forth.

973,782. CENTRIFUGAL FORCE-PUMP. Thomas Russell Hayton, Mount Vernon, Wash. Serial No. 460,157.

A centrifugal force pump comprising a rotary wheel provided throughout with closely arranged tangentially disposed curved blades having each face thereof upon a single arc throughout and extending from a point in proximity to the axis of the wheel to the periphery thereof, said blades so disposed with respect to each other that the space between each pair of blades will gradually decrease in width in a direction toward the axis of the wheel, a casing inclosing said wheel and provided



with an annular passage separated from the wheel by a contracted throat, and curved stationary vanes mounted in said throat and each having its inner face formed with two concaved portions each of equal length whereby a cusp is provided medially of the inner face of each of said stationary vanes, each of said stationary vanes having its outer face formed upon a single arc, each of said vanes so disposed that the inner end thereof will be positioned inwardly of and in close proximity to the cusp of one vane and its outer end projecting away from the outer face of another vane whereby the passage formed between two adjacent vanes will gradually decrease in width from its outer toward its inner end, said casing provided with an inlet and an outlet, said inlet opening into said wheel.

NEW INCORPORATIONS

Adirondack Granite Co., Ausable Forks, Essex County, N. Y.; quarry and prepare for market granite, marble, etc.; capital, $1,000,000. Incorporators: Edward W. Featherstone and Geo. H. Smith, both of Ausable Forks, N. Y.; Edwin G. Moore, Plattsburgh, N. Y.; W. A. Moore, Barre, Vt., and two others.

American Light, Heat and Power Co., Dover, Del.; to manufacture, generate, store and distribute electric light, heat and power; capital, $15,000 000. Incorporators: Warren N. Akers, William J. Maloney, Millard C. Taylor, Wilmington, Del.

Browning Manufacturing Co., Mansfield, O.; capital, $200,000; to manufacture cranes, shovels, etc. Incorporators: L. C. Pelott, Geo. F. Stalley, Jr., and A. S. Meyer, all of Columbus.

Cement Tile Co., Monticello, Ind.; capita,l $20,000; to manufacture sewer and drain tile. Incorporators: J. D. Timmons, T. W. O'Conner, W. F. Brucher and E. E. Sluss.

Crisfield Light and Power Co., Bridgeville, Del.; capital, $50,000; sell and supply light and to carry on the business of a gas company. Incorporators: Charles Owens, Robert R. Layton, Bridgeville; J. G. Gray, Wilmington.

The General Sanitation Corporation, Newark, N. J.; operate works for the sterilization and purification of water and other liquids; capital, $500,000. Incorporators: Clifford D. Meeker, East Orange, N. J.; Henry M. Skort, Summit, N. J.; Samuel M. Cardensare and Lyon T. Leet, both of New York City; Clarence A. Wolle, Bethlehem, Pa.; George W. Aubrey, Allentown, Pa.

Helena Rock Co., Helena, Ark.; capital, $25,000; to quarry sandstone.

National Signal Police Co., Buffalo, N. Y.; manufacture and operate signal systems; capital, $100,000. Incorporators: Augustus F. Scheu, John F. Nagel and Solomon F. Scheu, all of Buffalo.

United States Arc Lamp Co., New York, N. Y.; to manufacture and deal in arc lamps and lighting devices; capital, $5,000. Incorporators: G. F. Martin, H. P. Jones, E. J. Forhan, No. 154 Nassau st., New York.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
			STREET IMPROVEMENTS	
Ohio	Cincinnati	Nov. 4, noon	Brick paving, grading, limestone curb, drains, etc, Pogue ave.	John J. Wenner, Clk. Dir. Pub. Serv.
Pennsylvania	Allentown	Nov. 4, 1.30 p.m.	Bldg. sidewalk appr. for bridge over Lehigh riv. at Slatington.	J. S. Troxell, Clk. County Comrs.
Pennsylvania	North Braddock	Nov. 4	Improving Wilkins ave. and Willow st.	C. A. Stewart, Borough Engineer.
Minnesota	Duluth	Nov. 4, 10 a.m.	Repair. tar macadam pave. in 23d av., east, Superior to 5th st.	Olof G. Olson, Pres., Bd.Pub.Wks.
North Dakota	Stanley	Nov. 5, 2 p.m.	Constructing several grades.	W. C. Gibb, County Auditor.
Washington	Fort Ward	Nov. 5, 11 a m.	Constructing roads, walks, drains, crossings, etc., at fort.	Capt. E. C. Long, Constr. Q. M.
Wisconsin	Racine	Nov. 5, 10 a.m.	Building number of standard sidewalks.	P. H. Connolly, City Engineer.
New York	Albany	Nov. 7, 3 p.m.	Improve Jeannette st. with vit. paving blocks.	Isadore Wachsman, Secy., Bd.C.& S.
California	Santa Barbara	Nov. 7, 10 a.m.	Grading Sections Nos. 1 and 2 of Coast Road.	C. A. Hunt, Clk. Bd. Supervisors
New York	New York	Nov. 7, 2 p.m.	Grade, curb, flag and lay 48-in. double pipe culvert in 225th st.	George McAneny, Pres. Boro. Man.
Washington	Walla Walla	Nov. 7, 10 a.m.	Grad., drain., macadam., John Seeber, State Aid Road, No. 4.	H. L. Bowlby, Sec'y. St. Hwy. Bd.
Indiana	Fowler	Nov. 7, 1 p.m.	Bldg. 4 roads, dirt grade 27 ft. wide, with crushed blue limestone 9 ft. wide and 10 inches deep: 14,952 ft. long; cost $11,250; 14,530 ft., $9,910; 9,725 ft., $8,150; 9,766 ft., $8,400, bridges, culverts, etc.	Lemuel Shipman, County Auditor.
Oklahoma	Oklahoma City	Nov. 7, 5 p.m.	Grading Santa Fe and Hudson ave., and Poplar st.	Bob Parman, City Clerk.
Indiana	Terre Haute	Nov. 7	Constructing a 3-mile gravel road in Sugar Creek Township.	R. E. Gibbons, County Engineer.
Pennsylvania	Turtle Creek	Nov. 7, noon	Bldg. retaining walls on Monroeville rd., Stewart st., Brown ave	Philip Jones, Chm. Council St. Com.
Mississippi	Vicksburg	Nov. 7, noon	Widening and grading Pender Hill, bond double of bid.	J. D. Laughlin, Chancery Clerk.
New Jersey	Westfield	Nov. 7, 8.15 p.m.	Improving certain streets: 3 contracts: 4000 cu. yds. excav.; 4910 sq. yds. 6-in. and 10,200 sq. yds. 4-in. macadam, 2000 sq. yds. macadam, resurfaced, 3860 ft. concrete curb and gutter, No. 2: 3630 sq. yds. 6-in. and 4500 sq. yds. 4-in. macadam, Tarvia X binder, 7080 sq. yds. resurfaced, Tarvia X binder, 1660 lin. ft. brick gutter on concrete. No. 3: 980 lin. ft. brick gutter on concrete; 1610 ft. new curb, 1020 ft. curb reset on concrete; 635 lin. ft. culverts on 3 jobs; A. W. Vars, Town Surveyor.	Lloyd Thompson, Town Clerk.
Indiana	Vernon	Nov. 7, 11 a.m.	Constructing 2½ miles pike road in Bigger Township.	T. I. Thomas, County Auditor.
Indiana	Danville	Nov. 7	Bldg. roads Center and Union tps., 13,336; 14,986 and 8,802 ft. long.	Alfred Leininger, Chm. Co. Comrs.
Indiana	Fowler	Nov. 7, 1 p.m.	Constructing four stone roads in York Township.	Lemuel Shipman, County Auditor.
Indiana	Bloomfield	Nov. 8	Constructing a macadamized road in Jefferson Township.	Peter M. Cook, County Auditor.
Minnesota	Crookston	Nov. 8	Asphalt, creo. block, or other material, 22,000 sq. yds., also 5,000 lin. ft. curbing, 6 sts.; old bids rejected; J. E. Carroll, City Engineer.	A. M. Childs, City Clerk.
Indiana	Rensselaer	Nov. 9, noon	Constructing five stone roads in Keener Township.	James N. Leatherman, Co. Auditor.
Indiana	Wabash	Nov. 9, 10 a.m.	Grading and paving with gravel 1.5 miles road in Lagro Twp.	J. P. Noftzger, County Auditor.
Rhode Island	Providence	Nov. 9, noon	Bldg. State rds. in E. Prov., Exeter & W. Greenwich, 1 mi. each	John H. Edwards, Chm., S. B. P. Rd.
Ohio	Caldwell	Nov. 9	Brick paving and grading, 1.09 mi., Noble tp.; cost $16,487	State Hwy. Comr., C. of Co. Comrs.
Ohio	Chardon	Nov. 9	Brick paving and grading, 1 mi., Hampden tp.; cost $11,897.	State Hwy. Comr., C. of Co. Comrs.
Indiana	Sullivan	Nov. 9, noon	Constructing 12,445 ft. stone road in Hamilton Township.	L. O. Turnbull, Chm., Co. Comrs.
New York	Brooklyn	Nov. 9, 11 a.m.	Asphalt paving and grading 13,225 sq. yds., 6 sts : repave with asphalt concrete on macadam base, 15,600 sq. yds.; 4th ave. lay 123,520 sq. ft. cement sidewalks, etc., 3 sts., 2 aves.	Alfred E. Steers, Boro. President.
Florida	Fernandina	Nov. 10	Brick paving, Center st., from 5th to 11th sts.	G. L. Baltzell, City Clerk.
Indiana	Rushville	Nov. 10	Constructing 3 macadam and 2 gravel roads.	Board of County Commissioners.
New Jersey	Newark	Nov. 10, 10 a.m.	Grading and paving with Telford 2 roads, 8,846 and 6,133 ft. long; coating with macadam, 13,344 ft. Green Brook road.	Wallace Ougheltree, Dir. Freeh'ders.
Ohio	Lima	Nov. 10, noon	Constructing storm sewer at new Lima State Hospital.	Frank L. Packard, Arch., Columbus.
Indiana	Lafayette	Nov. 11, 10 a.m.	Building free gravel road, Tippecanoe County.	J. P. Foresman, County Auditor.
West Virginia	Huntington	Nov. 14, 1 p.m.	Paving with vit. brick, three alleys.	John Coon, Street Commissioner.
Pennsylvania	Washington	Nov. 14, noon	Furn. vit. paving brick and block for 2 roads, 14,400 and 1,250 sq. yds., labor and for macadamiz. two 1-mile roads.	John H. Moffitt, County Controller.
California	El Centro	Nov. 14	Grading approaches to two bridges.	D. S. Elder, County Clerk.
New Jersey	Elizabeth	Nov. 15, 8.30 p.m.	Paving Rankin st., with brick on 6-in. concrete; 4,425 sq. yds.; 2,036 ft. curb reset and 300 ft. new curb; Westfield ave.: 1,724 sq. yds. paving, 50 ft. new and 550 ft. curb reset, headers	N. K. Thompson, Street Comr.
Indiana	Logansport	Nov. 15	Bldg. James Harvey road, 1.5 mi. long, bet. Cass & White Cos.	
Louisiana	New Orleans	Nov. 18, 11 a.m.	Constructing roads and walks at Jackson Barracks, La.	G. B. Davis, Hibernia Bank Bldg.
Ohio	Cincinnati	Nov 18, noon	Improvement change in River Road, Crosby twp., Spec. No. 87, also North Bend rd. from Harrison pike to Mt. Healthy line.	Fred M. Dreihs, Clk. Co. Comrs.
Georgia	Dalton	Nov. 22, 3 p.m.	Brick, wood block or other pavement, 28,000 sq. yds. gran. curb	Paul B. Trammell, Mayor.
Louisiana	Crowley	Nov. 23	Bldg. 33,000 sq. ft. concrete street crossings.	R. J. Boudreaux, City Clerk.
			SEWERAGE	
Wisconsin	Manitowoc	Nov. 4, 10 a.m.	Rebldg. 20-in. sewer in 7th st., Hancock to Washington st.	Arthur Reichert, City Clerk.
Pennsylvania	Sewickley	Nov. 4, 4 p.m.	Bldg. 516 ft. 8-in., 110 ft. 6-in. vit. pipe, 15 8x6 Ys, etc.	Minott M. Baker, Acting Engineer.
Minnesota	Albert Lea	Nov. 5, 5 p.m.	Bldg. sanitary and storm sewers, 18 to 8-in., var. sts. & alleys.	William Barneck, City Engineer.
South Dakota	Mitchell	Nov. 7, 8 p.m.	Bldg. lateral sewers, 8 branches, 9,929 ft. 8-in. and 366 ft. 12-in. vit. pipe, 25 manholes, material and labor.	L. L. Ness, City Auditor.
California	Roseville	Nov. 7	Constructing complete sewer system; septic tank, contact beds, 42,275 ft., 6-in.; 2,640 ft., 8-in.; 13,151 ft., 10-in.; 7,984 ft., 12-in. vit. pipe.	J. H. Stineman, City Clerk.
New York	Yorkville	Nov. 7, 4 p.m.	Bldg. sanitary system of sewers including 19,000 ft. of sewer, disposal plant, 33 manholes and 10 flush tanks, W. G. Stone, Mann Bldg., Utica, Engineer.	W. Armstrong, Village Clerk.
Pennsylvania	Scranton	Nov. 7	Laying a 10-in. sewer from Jefferson ave., in Franklin st. to river	J. A. Loughney, Sec'y Jermyn Coun.
Oklahoma	Oklahoma City	Nov. 7, 5 p.m.	Bldg. storm water sewer in 3 sts., sanitary main sewer, Univ. addn. sanitary lateral sewer Phillips & Mead East side addn.	Bob Parman, City Clerk.
New Jersey	Perth Amboy	Nov. 7, 8.30 p.m.	Building 12-in. sewer in Johnstone st.	Geo. M. Adair, Street Commissioner.
New York	Albany	Nov. 7, 3 p.m.	Building sewers in Third ave. and S. Hawk st.	Isadore Wachsman, Secy., Bd.C.& S.
Ohio	Carthage	Nov. 8, noon	Bldg. sanitary sewer system, complete.	Lewis Hall, Village Clerk.
New York	Brooklyn	Nov. 9, 11 a.m.	Bldg. sewers in portions of 7 sts , outlet sewers, 3 sts., $36,048.	Alfred E Steers, Boro President.
Nebraska	Alliance	Nov. 9, noon	Bldg. sanitary sewer, Dist. 29, Grant & Letton, Engrs., Lincoln	F. W. Irish, City Clerk.
Indiana	Richmond	Nov. 10	Bldg. 950 ft. 24-in. pipe sewer, small amount rock excavation.	Fred R. Charles, City Engineer.
New Jersey	Atlantic City	Nov. 14, 8 p.m.	Bldg. storm water drainage system; rein. conc. and brick; 10,400 ft. long; also 10,390 ft. lateral drains.	E. D. Rightmire, City Engineer.
Kansas	Ft. Leavenworth	Nov. 16, 11 a.m.	Bldg. 24-in. outfall sewer, 8,500 ft. long, 2,600 ft. of c. i. pipe.	Capt. J. E. Normoyle, Constr. Q.M.
New Jersey	Keyport	Nov. 17 8 p.m.	Furn. and lay 10.5 miles 8 to 15-in. vit. pipe sewers with manholes, etc., and a sewage disposal works and pumping station.	E. E. Conklin, Mayor.
North Carolina	Ft. Caswell	Nov. 18	Constructing sewers and cisterns at post.	Lt. R. O. Edwards, Constr. Q. M.
Virginia	Norfolk	Nov. 19	Furn. & install 3 elec.-driven cent. pumps, Colley ave. Pump. Station, capacity 2,000, 3,000 and 4,000 gals. per minute.	W. T. Brooke, City Engineer.
New Jersey	South River	Nov. 28, 8 p.m.	Bldg. 2 sections of sewer system: 7 miles t. c. pipe sewer, 15-in. and less and appurtenances; disposal works, inc. c. i. pipe, river crossing, pump house, disposal works and pip. to these.	Charles Anderson, Boro. Clerk.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
			WATER SUPPLY	
New York	Buffalo	Nov. 4, 11 a.m.	Three steam turbine elec. generators for Pump. Sta., Porter ave.	F. G. Ward, Comr. Pub. Wks.
Pennsylvania	Saegertown	Nov. 4, 8 p.m.	Furn. 250 tons c. i., pipe, 10,000 lbs. specials; 28 fire hydrants, gate valves, boxes, etc.; bldg. conc. reservoir; lay. 3 mi. 4, 6 and 8-in. pipe; Witmer & Brown, Engrs., Buffalo, N. Y.	P. S. Davis, Burgess.
Nebraska	Fort Crook	Nov. 4, 11 a.m.	Constructing a reservoir and well at fort	Lt. A. W. Lane, Constr. Q.M.
Illinois	Clinton	Nov. 5	Install pumping plant, either steam or electric motive power; cap. at least 1,000,000 gals. per day; firms to submit both plans and proposals	L. W. Lemon, City Engineer.
Kansas	Chanute	Nov. 7, 5 p.m.	Furn. & lay. 9 mi. 4 to 16-in. water mains, install. three 3 hp. boilers	W. F. Sams, City Clerk.
Minnesota	Appleton	Nov. 7, 8 p.m.	Furnishing complete pumping plant for 10-in. well, 185 ft, deep.	Manford Horn, City Recorder.
Kansas	Kinsley	Nov. 7, noon	Furn. and lay 2,500 ft. 6-in. 11,250 ft. 4-in. c. i. pipe, eight 4-in. fire hydrants; ten 4-in. and two 6-in. valves; iron service boxes	P. A. Pearson, Mayor.
New York	Yonkers	Nov. 7, 3.30 p.m.	Furn. and deliver. at Public Dock 100 lengths 8-in. pipe weight 830 lbs. per length, and 1,000 lengths, 6-in., weight 420 lbs.	James V. Mahony, Secy., Bd.C.& S.
South Dakota	Brookings	Nov. 7, 8 p.m.	Building 24-ft. or 30-ft. well	G. H. Stoddart, City Auditor.
Pennsylvania	Sharpsburg	Nov. 8, 5 p.m.	Furn. & install. 2 300 h.p. boilers, feed water heater, pump, etc.	Albert E. Young, Borough Clerk.
Minnesota	Jeffers	Nov. 8	Drilling an 8-in. well	J. W. Shaw, Village Recorder.
Mississippi	Yazoo City	Nov. 9	Boring an artesian well	S. S. Griffin, Clk. Co. Supervisors.
Florida	Lakeland	Nov. 10, noon	Furn. 3 mi. 10, 6 and 4-in. c. i. pipe, fittings, hydrants, valves and boxes; compound engine, air compressor, generator, exciter, and switchboard; laying pipe lines, setting hydrants, valves and boxes; bldg. power house, machinery foundations, reservoir and installing machinery, Wm. W. Lyon, C. E., Duval Bldg., Jacksonville	H. L. Swatts, Sec'y. B. Bd. Trus.
Missouri	Kansas City	Nov. 10	Furn. 36-in. x 24-ft., 20-in. x 18-ft., and 16-in. x. 12-ft. all-geared head lathe with constant speed motor drive, Turkey Creek Station	E. B. Harrington, Sec'y Fire & W.B.
Washington	Spokane	Nov. 11	Completing Lincoln Heights reservoir; cost $125,000	F. P. Weymouth, Pres. Bd. P. Wks.
Rhode Island	Fort Greble	Nov. 16	Bldg. 1,000,000-gal. reinforced concrete reservoir	Lieut. R. H. Smith, Constr. Q.M.
New Jersey	South River	Nov. 28, 8 p.m.	Bldg. water works and sewer system; W. W. Young, Con. Engr., N. Y. City, Philadelphia and Bordentown	Joseph Mark, Mayor.
			BRIDGES	
Pennsylvania	Beallsville	Nov. 5, 7 p.m.	Bldg. abutments for bridge on Plum rd., stone and concrete work	A. J. Leonard, Secy., Deemston Co'c'
Ohio	Delaware	Nov. 7, noon	Bldg. substructure of Ferson bridge in Orange Township	W. H. Bodurtha, County Auditor.
Ohio	Jefferson	Nov. 7, 1 p.m.	Bldg. retaining wall and facing wing wall at Brown br., Con. Tp.	J. S. Matson, County Surveyor.
Indiana	Greensburg	Nov. 7	Erect. reinforced concrete bridge to cost $500; C.B. Creig, Engr.	F. E. Ryan, County Auditor.
North Carolina	Columbus	Nov. 7	Bldg. low bridge over Green river at Womack bridge	F. M. Burgess, Clk., County Comrs.
Colorado	Pueblo	Nov. 7, 4 p.m.	Remov. bridge and bldg. steel bridge over Ark. riv., at Union riv	D. P. Gaymon, City Engineer.
Oklahoma	Oklahoma City	Nov. 7, 10 a.m.	Bldg. rein. arched concrete bridge	G. W. Carrico, Chm. County Comrs.
Indiana	Greenfield	Nov. 7, 10 a.m.	Constructing three County bridges	Bd. Comrs. of Hancock County.
Mississippi	Yazoo City	Nov. 7	Bldg. 3 bridges over one creek and 2 bayous	S. S. Griffin, Clk. Co. Supervisors.
Mississippi	Tupelo	Nov. 7	Bldg. bridge in T'n Creek bot. north of Belden, Leigh & Un. rd.	Norbin Jones, Clk. County Superv.
Indiana	Vincennes	Nov. 9, 2 p.m.	Constructing six bridges for county	John T. Scott, County Auditor
California	Merced	Nov. 9, 10 a.m.	Bldg. 3 conc. bridges in Rd. Dist. No. 1 and two in No. 3	P. J. Thornton, County Clerk.
California	San Diego	Nov. 10	Bldg. two 100-ft. and three 40-ft. spans over river near Ysidara	W. H. Francis, Clk. Bd. Superv.
California	San Luis Obispo	Nov. 10, 10 a.m.	Bldg. rein. conc. girder bdge. over San Simeon Ck. nr. Cambria	H. H. Carpenter, Clk. Co. Superv.
New York	Syracuse	Nov. 10, noon	Bldg. $40,000 lift bridge over Erie canal at Franklin st.	F. M. Williams, State Engr. Albany
Indiana	Indianapolis	Nov. 10, 10 a.m.	Bldg. bridge over Williams Creek in Washington Township	Albert Sahm, County Auditor.
New York	New York	Nov. 10, 2 p.m.	Bldg. shelters on Harlem river bridges and Vernon av. bridge.	Kingsley L. Martin, Bridge Comr.
Kansas	Mound City	Nov. 10, noon	Bldg. four steel bridges with stone or concrete abutments	Geo. W. Waymire, County Clerk.
Indiana	Indianapolis	Nov. 11, 10 a.m.	Erecting bridge over Fall Creek in Washington Township	Albert Sahm, County Auditor.
Ohio	Cincinnati	Nov. 11, noon	Bldg. concrete bridge on Fallis road, Symmes township	Stanley Struble, Pres. Co. Comrs.
Kansas	Leavenworth	Nov. 12, noon	Repairing Bridge No. 253; south of Tonganoxie	J. W. Niehaus, County Clerk.
Pennsylvania	Washington	Nov. 14, noon	Bldg. culverts, small bridges, etc., on four County roads	Chaney & Armstrong, County Engrs.
Maryland	Westernport	Nov. 19, 2 p.m.	Bldg. bridge over George's Creek	William Harvey, City Engineer.
			LIGHTING AND POWER	
Washington	Montesano	Nov. 7	Furn. and install electric fix. and incan. lamps in new Court H.	F. Rosmond, County Auditor.
California	Santa Ana	Nov. 7, 5 p.m.	Heating plant for City Hall; bidders furnish plans, etc	Ed. Tedford, City Clerk.
West Virginia	Parkersburg	Nov. 9	Light city after Jan. 1, 250 arc lights, 50 alley lights, any time	Frank Good, City Auditor.
Florida	Lakeland	Nov. 10	Improving electric light and water works plant; cost $40,000 for detail; see item under "Water Supply."	C. W. Deen, Chm. Bd. Pub. Works.
Maryland	Annapolis	Nov. 12, 11 a.m.	Completing power plant at U. S. Naval Academy	Sec'y. Navy Dept., Washington, D.C.
California	Bridgeport	Nov. 14	Franchise 30 years for transmission line	Geo. deLury, Co. Clerk.
New York	New York	Nov. 16	Furn. and install elec. control. cables in underground ducts from South st. high pressure pump. sta., gate valves, sub. ducts, etc.	H. S. Thompson, Comr. W.S.,G.&.E.
Montana	Missoula	Nov. 20	Constr. $445,000 power plant on Rock Creek at Stevensville	E. S. Dorman, Ch. Engr., Rock Creek. Power Company.
New Jersey	South River	Nov. 28, 8 p.m.	Bldg. elec. light, power pump. plant and transmission line	Charles Anderson, Borough Clerk.
			MISCELLANEOUS	
New Jersey	Roselle	Nov. 4	Bldg. $20,000 Borough Hall, bids of Oct. 26 rejected	J. F. Ostrander, Borough Clerk.
Louisiana	New Orleans	Nov. 5, 11 a.m.	Furnishing 13,000 tons of rock for New Orleans harbor	Capt. R. R. Ralston, U.S. Engr. Cps
New York	Albany	Nov. 7, 3 p.m.	Bldg. police station on N. Pearl st., W. H. Van Guysling, Archt.	I. Wachsman, Sec'y. Bd. C. & Sup.
Alberta	Calgary	Nov. 7, noon	Furn. ties and poles for extension of municipal street railway.	W. D. Spence, City Clerk.
Ontario	Ottawa	Nov. 7, 4 p.m.	Bldg. extension to wharf at Providence Bay, Algoma, Ont	R. C. Des Rochers, Sec'y. D.P.Wks.
South Dakota	Mitchell	Nov. 7, 8 p.m.	Furnishing 500 ft. standard 3-in. fire hose	L. L. Ness, City Auditor.
Dist. of Col.	Washington	Nov. 8, 2 p.m.	Bldg. chemical engine house at Penna av. & 28th place, S.E.	C. H. Rudolph, Ch. Comrs., Ditsm.
New Jersey	Highland Park	Nov. 10, 8 p.m.	Furnishing 300 ft. 2½-in fire hose in 50-ft. lengths	James R. Earle, Clk., Boro. Council.
Oklahoma	Arapahoe	Nov. 10	Plans and specifica. for $50,000 Co. Court House, bonds voted.	Fred T. Huston, County Clerk.
Ohio	Cleveland	Nov. 10, 10 a.m.	Repairing breakwater at Cleveland harbor	Col. John Willis, U. S. Engr.
Ohio	Columbus	Nov. 10, 11 a.m.	Bldg. concrete revetment, Buckeye Lake, Licking Co.	James R. Marker, Ch. Engr. St.B.PW
Illinois	Chicago	Nov. 10, 11 a.m.	Furn. and install metal furniture in City Hall	B. J. Mullaney, Comr. Pub. Wks.
New York	New York	Nov. 10, 3 p.m.	Furn. automobile, also 430 cu. yds. clay loam for Bronx pks.	C. B. Stover, Pres., Park Board.
Georgia	Atlanta	Nov. 12, noon	Bldg. Grady Hospital, King & Walker, Archs., 90 N. Forsyth st.	Jos. Hirsch, Pres., Grady Hos. Bldg.
Ohio	E. Youngstown	Nov. 12, noon	Erect. brick, stone and frame city build.; R. F. Thompson, arch.	D. C. Hamilton, Mayor of Village.
California	Los Angeles	Nov. 14, 11 a.m.	Dredging 25-ft. channel to wharf at Wilmington; driving piles, erecting superstructure, railroad tracks, etc	Board of Public Works.
Wisconsin	Milwaukee	Nov. 14	Bldg. $95,000 central fire station at Broadway & Martin Sts	C. D. Thompson, City Clerk.
Maryland	Hagerstown	Nov. 15	Erecting hospital for Washington County, J. H. Ritchie, Arch.	Board of County Commissioners.
California	San Francisco	Nov. 16	Construct. two incinerating plants, 120 tons each, cost $250,000	Board of Public Works.

STREET IMPROVEMENTS

Phœnix, Ariz.—All bids have been rejected for construction of territorial road into Douglas; new bids will be asked by Territorial Board of Control.

Hot Springs, Ark.—Road District No. 3 is considering construction of road at cost of $46,000.

San Francisco, Cal.—Plans and specifications of Board of Public Works for street and other improvements on Beale st. have been adopted.

Pueblo, Col.—Council has decided necessity of building 2½ miles of cement sidewalks.

Hartwell, Ga.—Hart County will vote $40,000 road and bridge bonds.

Macon, Ga.—Paving of Georgia ave. is being urged.

Cœur D'Alene, Ida.—Council is considering paving of 2d and 4th sts.

Chicago, Ill.—Board of Local Improvements has ordered paving of 5th ave.

East St. Louis, Ill.—Board of Local Improvements is considering improvement of Alexander and 27th st., Gray blvd. and Wimmer pl.; cost $85,000.

Freeport, Ill.—City Engineer J. A. R. Daniels has prepared plans for 3 miles of brick and macadam paving; will ask for bids about January.

Glencoe, Ill.—Village Board has rejected all bids for 10,000 lin. ft. of paving in Sylvan Newhall subdivision; new bids will be asked; cost $26,000.

Peoria, Ill.—Estimates for paving Elizabeth st. from Chambers ave. to the Knoxville road are being prepared by the Acting City Engineer

Richmond, Ind.—Board of Public Works is considering paving of North E st. from 10th to 16th st.

Cedar Rapids, Ia.—Paving improvements to amount of $75,000 will be made next year, according to plans of Council.

Lawrence, Kan.—Council has ordered

grading and improvement of Mississippi st. —F. D. Brooks, City Engineer.

Salina, Kan.—Council has rejected bids received for $53,960 paving bonds.

Baltimore, Md.—Residents of Mount Washington and vicinity are considering construction of boulevard from Mount Washington along Western Run to Pikesville.

Fall River, Mass.—Finance Committee has recommended $15,000 appropriation for highways.

Haverhill, Mass.—City Engineer Hutchins has completed profile plans for the reconstruction work on Salem st.

Holyoke, Mass.—Board of Public Works has voted to macadamize Elm st. and Dwight st. South.

Flint, Mich.—Genesee County Board of Supervisors has ordered tax for permanent road improvements.

Detroit, Mich.—Wayne County will vote Nov. 8 on $2,000,000 bonds for good roads.

Detroit, Mich.—Board of Public Works will ask for bids for paving portions of four streets and grading and paving Lafferty pl. and several alleys.—J. J. Haarer, Commissioner.

Flint, Mich.—County will expend $25,000 in repairing roads.

Duluth, Minn.—Park Board is planning to improve Snively road.

St. Joseph, Mo.—Board of Public Works will soon let contract for about 10 blocks of asphalt resurfacing, on brick and asphalt foundation; will also ask for bids for two blocks of asphalt paving on 4th st.—Dave Lawlor, City Engineer.

Camden, N. J.—Council has decided to pave Atlantic ave. with sheet asphalt on concrete foundation.—Jas. E. Hewitt, President.

Milburn, N. J.—Cement sidewalks will be laid on Myrtle Ave., Cypress and Pine Sts.

Seneca Falls, N. Y.—Citizens have voted bonds for street paving.

Schenectady, N. Y.—Board of Aldermen has decided to widen Dock st.

Schenectady, N. Y.—Resolutions for street improvements have been approved as follows: Grading, curbing and paving Watt St.; grading, curbing and paving a portion of the River Rd., costing $7,002.69; grading Yorkston St., costing $3,241.32; grading, curbing and paving Edison Ave., $25,948.81.

Cincinnati, O.—Council is considering improvement of Wood ave. and Hickory st.

Cincinnati, O.—City Engineer Shipley has estimated cost of improving Sumner st. with granite at $15,426.

Cincinnati, O.—Council is considering $7,500 bond issue for improvements in McAlpin St.

Lancaster, O.—Plans will be prepared for paving Ewing st.

New Philadelphia, O.—Tuscarawas County Commissioners have instructed Engineer to prepare plans for building 1,000 ft. of pike on the Shanesville road, in Dover Township.

Springfield, O.—Bids will be received for improvement of Sigler St. extension in West Springfield; contracts will be let as soon as possible and work to be completed promptly.

Ardmore, Okla.—Contract will be let for paving Broadway.

Tulsa, Okla.—City will construct 110,000 sq. yds. of paving, 20,000 sq. yds. will be of brick; cost $150,000. T. C. Hughes, City Engineer.

Portland, Ore.—Property owners in Southeast Portland are planning to widen Powell st.

Portland, Ore.—Montavilla residents are considering hard surfacing of Villa ave.

Salem, Ore.—Mayor George F. Rodgers has presented resolution to Council instructing City Engineer Perrott to draw up plans and specifications for the improvement, with hard surfaced pavement, 56 blocks of streets.

Beaver Falls, Pa.—Council has decided to grade 1st ave.—H. W. Zeller, President.

Carlisle, Pa.—Paving of portion of North Hanover st. with vit. brick is being urged.

Harrisburg, Pa.—Council is considering paving and curbing of Forrest st.

McKeesport, Pa.—Council has approved specifications for paving Greensburg ave.

Mt. Penn, Pa.—Borough has decided to sell $1,100 bonds to make street improvements.

Johnson City, Tenn.—Bids have been rejected for grading Maple st.

Brownwood, Tex.—Brown County will vote Nov. 14 on $50,000 bonds to complete construction of roads in Precinct No. 1.

Dallas, Tex.—Bids have been asked for resurfacing Main st.: also paving Main st. with bitulithic, wooden block, vit. brick or asphaltic concrete.

Dallas, Tex.—Municipal Commission ordered paving with Jacksboro rock of Rawlins St. from Oak Lawn Ave. to Coke St., and Coke St. from Rawlins to Hall St., work is to be done by city under specifications adopted for this class of paving.

Denison, Tex.—Paving of Grand ave. from Ervay to Fair Grounds is being urged.

San Antonio, Tex.—Civic Improvement League is urging construction of driveway along river bank extending from Bowen's Island to point several miles outside city limits.

Amherst Courthouse, Va.—Citizens will vote Jan. 14 on $135,000 bonds for permanent road improvement.

Bedford City, Va.—Bedford County is considering $55,000 bond issue for road improvements.—P. St. J. Wilson, Richmond, State Highway Commissioner.

Bristol, Va.—Special Road Committee of the Bristol Board of Trade, composed of G. E. Nickels, John N. Huntsman, J. C. Bayless, G. W. Robertson and J. B. Young, are considering plans for having Bristol-Blountville pike extended to Kingsport; there is still unprovided for about eight miles of construction work.

Gate City, Va.—Scott County will vote on $300,000 bonds for road construction.

Staunton, Va.—Augusta County Supervisors have decided to macadamize Spring Hill Rd.; distance about eight miles.

Bellingham, Wash.—Bids have been rejected for paving Grant st.; new bids will be asked.

Montesano, Wash.—County is considering improvement of roads at cost of $280,000.

Waterville, Wasn.—Macadam road, 13 miles long, extending from Columbia River to Rock Island, will be constructed at cost of about $25,000.

Fredericton, N. B., Can.—City is asking for bids for supply of 3,000 tons of trap rock for construction of tarvia pavement, to be supplied during coming winter.

New Westminster, B. C., Can.—Citizens have passed by-law authorizing raising of $70,000 for building sidewalks throughout municipality of Burnaby.

Niagara Falls, Ont., Can.—Chippawa Village Council has adopted by-law granting to Queen Victoria Park Commission the right to extend Fort Erie-Niagara Falls blvd. in Macklem, Bridgewater and Water sts., to connect with boulevard stretch from the park to the village line.

CONTRACTS AWARDED

Los Angeles, Cal.—Improving Figueroa St. to F. E. Low, $7,727.

Denver, Colo.—To Herbert Mann for laying 31,347 sq. ft. concrete sidewalks in North Side Improvement Dist. No. 15, $16,-927.

Hartford, Conn.—Construction of about 5.847 lin. ft. of macadam-telford road, to the Lane Construction Corporation, Meriden, Conn., $1.71 per lin ft. for macadam, $2.15 for telford and $1 per lin. ft. for rubble drain.

Macon, Ga.—Paving 3d and Plum sts., to Lasley Co.

Chicago, Ill.—Building concrete driveways and sidewalks on Ashland ave. in front of city building, to Thos. D. Jay & Co., city, $1,109.60; furnishing granite screenings, to Wisconsin Granite Co., 138 Washington st., $2.23 and $2.27 per cu. yd.

De Kalb, Ill.—To Brewster & Evans for paving Adams st. with creosoted wood block, $34,492.

East St. Louis, Ill.—To the Meyer Construction Co., St. Louis, for improving alley between 12th and 13th sts. and College ave. and State st., $4,688; to same firm, to improve rock road from 9th to 10th st., $2,917; to C. A. Horn, East St. Louis, for improving Brady ave., $21,923; also for improving 19th st., $8,335; to Gaynord & Sweeney, East St. Louis, for improving Kansas ave., $7,833.

Wabash, Ind.—Construction of two gravel roads, one to Alonzo Hoover, North Manchester, $4,445; another to C. M. Wales, Converse, $7,825.

Des Moines, Ia.—By Department of Streets and Public Improvements, to Bryant-Ford-McLaughlin Asphalt Paving Co., for paving and curbing 37th st.

Boston, Mass.—To the Central Construction Co., 6 Beacon st., for vit. brick pavement at the Navy Yard, $7,381.—William M. Smith, Acting Chairman of Bureau of Yards and Docks, Navy Department, Washington, D. C.

Portsmouth, N. H.—By Board of Public Works, for laying and grouting paving on Islington st., to Thomas Fitzpatrick, Beverly, Mass, $2.53 per yd.

New York, N. Y.—To Martin Scanlon, for furnishing sandstone paving blocks for Williamsburg Bridge, $5,805.

Rochester, N. Y.—Smith St., Medina block stone, to H. N. Cowles, $5,083; Blossom Rd., sidewalks, to Henry Schoenfelt, $432.50; Oak St., sewer, to Nicola Desiderio, $4,094.

Toledo, O.—Improving River road from Maumee to Turkey Foot Rock, to the Grape Isle Stone Co.; estimate $13,471.

Chester, Pa.—Paving 25 streets with Filbertine, to Filbert Paving and Construction Co., Philadelphia, about $190,000, price per sq. yd. being $1.67 for 6-in. base, while on five of the streets where traffic is not so heavy a 4-in. base will be put in at $1.49; paving West 3d st. with wood block, to Edwin H. Vare, Philadelphia, 37,200 sq. yds., $2.74; to Dickerson Paving and Construction Co., city, for paving 5th st. with Amiesite, the price being $2,400 for 1,500 sq. yds., at $1.60; also Parker st. with Grafton block, similar to what is already used on other portions of the same thoroughfare, the aggregate price being $7,-372.93, or $2.27 per sq. yd.; no contract was let for paving 8th st.

Harrisburg, Pa.—Road improvements: Newport, 14,742 lin. ft. highway in Richmond Township, vitr. brick, to Fred Robison, Waynesburg, $49,265; Indiana Borough, 8880 lin. ft. highway, vitr. brick, to M. Bennett & Sons, Indiana, $20,517; Brownsville, for a section of the National Pike, vitr. brick, 1076 lin. ft., to W. C. McCormick, Uniontown, $5,975.

Memphis, Tenn.—Paving Peabody ave., to the Memphis Asphalt and Paving Co., at $35,260; to H. P. Streicher & Co., for extension of Madison ave. from Cooper st. to Parkway, $19,130; asphalt will be used on both streets.

Dallas, Tex.—Grading Rawlins st., to Innes Gano, 30c. per cu. yd.

Dallas, Tex.—To Texas Bitulithic Co., $2.30 per. sq. yd. to pave Pearl St. from Live Oak St. to Ross Ave.; total 5965 sq. yds.

Richmond, Tex.—By Fort Bend County Commissioners to W. D. Haden, Galveston, to complete construction of shell road from Richmond to connect with Harris County shell road below Missouri City, $81,754.

Salt Lake City, Utah.—To Allen & Austin for construction of about 2,000 sq. ft. of cement paving, 17c. per sq. ft.

Pasco, Wash.—Building cement sidewalks, to Overton Bros., Corvallis, Ore.

Seattle, Wash.—Concrete walks on Lane st., to W. N. Smith, $6 623.40.

Spokane, Wash.—Parking and sidewalking Division st., Boone ave. to Bridge, estimate $2,650, to H. Walker, $2,300; grading, curbing, parking and sidewalking Jefferson st., estimate $2 600, to Massie & Long, $2,265; Sherwood st., estimate $2,100, to Massie & Long, $1,845; 20th ave., Helena and Hogan sts., estimate $17,600, to Abbott & Joslin, $17,400; Wellesley ave., estimate $14,200, to Mitchell Bros., $12,472; sewer, Grant and Stocker sts., estimate $3,506, to R. B. De Camp, $2,750; sewer, 27th ave., $2,501, to R. B. De Camp, $2,750; grading, curbing and sidewalking Sherman st., 10th to 11th aves., estimate $1,570, to J. B. Mitchell, $1,439.

Moundsville, W. Va.—Building Waynesburg Rd. to Rosser & Maloney, Bellaire, O., $1.22 per sq. yd.

Ottawa, Ont., Can.—To Ottawa Construction Co., for. asphalt pavements on Wellington st., Flora st. and Melgund ave., $15,586, $20,560 and $4,395, respectively; to Barber Asphalt Co. for Anne st., $1,900.—N. H. H. Lett, Secretary Board of Control.

BIDS RECEIVED

Los Angeles, Cal.—Construction of fill for a highway across Arroyo Seco at Pasadena ave, Hall-Martin Co., $120,000, with charge of $9 per cu. yd. for extra concrete and 65c. per lin. ft. for additional pilings; Mersereau Bridge and Construction Co., $118,750, with extra charges of $9.50 per cu. yd. for concrete and $1.50 per lin. ft. for piling.

Waterford, Conn.—Construction of about 1,800 lin. ft. of telford and 700 lin. ft. of macadam road. Albert J. Perkins, New London, $2.25 per lin. ft. for telford and $1.65 per lin. ft. for macadam; Frank Redden, New London, $2.35 and $1.58; A. D. Bridge's Sons Co., Inc., Hazardville, $2.44 and $1.84.

Harvey, Ill.—Paving Columbia ave. with brick, Thos. W. Kelly, from $17,187 to $17,-836 on various kind of brick and Smith & Brown, $16,826 and $17,569 for various kinds of brick.

Brooklyn, N. Y.—Regulating and paving with asphalt on concrete foundation the roadway of New York ave. from Ave. H to the southerly line of Flatbush water works, Barber Asphalt Paving Co., 30 Church st., New York, $11,619; Uvalde Asphalt Paving Co., 1 Broadway, New York, $11,301; Cranford Co., 52 9th st., Brooklyn, $11,827; Borough Asphalt Co., 1301 Metropolitan ave., Brooklyn, $11,150.

New York, N. Y.—Street improvements in Borough of Queens, (a) regulating and repaving with granite blocks on a concrete foundation a roadway in Fulton ave. from Astoria Ferry to Boulevard, also for regulating, grading, recurbing and rebuilding catch basins and paving with asphalt blocks on a concrete foundation, (b) Hopkins ave. from Broadway to Grand ave., (c) Crescent ave. from Jamaica ave. to Newton ave. also regulating grading, curbing and paving with asphalt blocks on a concrete foundation. (d) Fifth ave. from Jackson ave. to Pierce ave., (e) Eighth ave. from Flushing ave. to Graham ave, for repaving with granite block pavement on a sand foundation, (f) College Point

Causeway from a point 200 ft. north of Myrtle ave. to a point 3,400 ft. north of Myrtle ave., (g) Jackson ave. from Trans Meadow road to Woodside ave., for regulating, grading, curbing and repaving with vit. blocks on a sand foundation, (h) Woodhaven ave. from Jamaica ave. to a point 710 ft. north of Jamaica town line: (a) J. J. Shea, $15,325; (a) Astoria Construction Co., $14,855; (a) Greene Contracting Co., $19,330; (a) H. P. George, $14,775; (a) M. Baird Contracting Co., $15,371; (a) Clancey & Van Alst, $15 502; (a) Hicks-Johnson Construction Co., 150 Jackson ave., Long Island City, $15,128; (a) Atlanta Contracting Co., $14,550; (a) H. A. Mullen, $14,436; (a) Peace Bros., $16,810; Hastings Pavement Co., 25 Broad st., city, (b) $21,564, (c) $20,689, (d) $13,760, (e) $16,149; Barber Asphalt Paving Co., 30 Church st., (a) $22,113, (c) $21,416, (d) $14,042, (e) $17,199; H. J. Mullen, (f) $19,360, (g) $19,715, (h) $35,430; H. P. George, (f) $20,640, (g) $20 303, (h) $40,184.

Youngstown, O.—McKinnie st. paving, S. H. DeGroot, $10,514; Rayen ave. paving, Westrumite material, Kennedy Bros., $16,211; asphalt, Cleveland-Trinidad Co., $17,272; Hine st. paving, M. P. Connelly, $12,891, and Woodbine and Bryson st. paving, S. H. De Groot, $10,285.

Bedford, Pa.—Paving section of the Yellow Creek road in Bedford County, as follows: Chas. T. Eastburn, Yardley, 18 bids, $88,919 to $154,755; McLaughlin Contracting Co., Pittsburg, 9 bids, $110,934 to $154,321; J. E. Francis, Punxsutawney, 8 bids, $131,699 to $168,938; Thos. Meehan & Son, Mt. Airy, 14 bids, $117,748 to $185,380; Vipond, Snapp & Drhew, Altoona, 6 bids, $120,244 to $173,563; Jas. Nixon, Clairton, 21 bids, $105 562 to $153,664; Juniata Paving Co., Philadelphia, 8 bids, $120,336 to $154,065.

Victoria, B. C., Can.—Paving Vancouver st., Worswick Paving Co., on standard specifications prepared by the City Engineer, $2.25 per sq. yd. for pavement and 65c. per yd. for removing material; total $42,820; alternative bids for pavement according to company's own specifications were submitted of $1.70 and $1.40 per sq. yd.; total $33,630 and $28,590, respectively; City Engineer's tender was on his standard specification, $1.90 per yd. and 80c. for removing material; total $38,160; Westrumite, Ltd., bid on the standard specification, $2.25 per sq. yd. and 60c. to 70c. for removing material; total $42,680, and submitted also alternative bid of $1.68 per yd. for pavement and 60c. to 70c. for removing material; total $32,604; and second alternative bid, $1.46 per yd.; total $18,064.

SEWERAGE

Cullman, Ala.—Installation of complete sanitary sewer system is being considered.

Mobile, Ala.—Engineer Wright Smith has submitted plans to Board of Public Works for extension of sewer system; cost $204,700.

Los Angeles, Cal.—Board of Public Works has authorized City Engineer to prepare and submit plans for storm drain along Wilshire blvd.

Sarasota, Fla.—City is considering $20,000 bond issue for sewerage and water works improvements.—J. Louis Houle, City Clerk.

Americus, Ga.—Citizens will vote Nov. 8 on $65,000 bonds for extension of sewerage system and building of municipal electric light plant.

Macon, Ga.—City has decided to construct one mile of sewers in North Highlands according to specifications completed by Consulting Engineer J. W. Wilcox.

Marietta, Ga.—Citizens will vote on $15,000 sewer bonds.

Charleston, Ill.—Board of Local Improvements has decided to construct sewer in 11th and Harrison sts.

Paris, Ill.—Citizens have voted $15,000 bonds to construct sewer along Big Four right of way and north on Water st. to Edgar st. and northeast to Blackburn st.

Evansville, Ind.—Board of Public Works has passed resolution for sewer from Red to Maryland st.

Kokomo, Ind.—R. L. Sackett, Pardue University, Lafayette, has been retained as Engineer for construction of a sanitary sewer system.

Muncie, Ind.—Bids will be received by J. Earl Houts, Town Clerk, Wyser Bldg., for construction of sewers in Riverside City.

Lyons, Kan.—Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., will prepare plans for installation of sewer system.

Topeka, Kan.—W. G. Tandy, Commissioner of Streets and Public Improvements, is planning construction of sewer to handle sewage of the western part of the city; cost about $30,000.

Baltimore, Md.—Residents of Mount Washington and vicinity are considering construction of sewerage system; survey being made by McLean Constructing Co.

New Bedford, Mass.—Sewer will be constructed in Capitol st. and West French ave. at cost of $1,700.

Virginia, Minn.—Council is considering establishment of Sewer District No. 4.

Cameron, Mo.—Engineers Seitz & Peterman, Corby Bldg., St. Joseph, Mo., have completed plans for 8 and 10-in. vit. pipe lateral sewers.—W. G. Stoner, Mayor.

La Plata, Mo.—Cost of proposed sewerage and water plant has been estimated at $55,000.

Shelbina, Mo.—Mayor Allgaier has recommended installation of sewer and water system.

St. Louis, Mo.—Plans have been prepared for sewage pumping station in Forest Park to dispose of odor in River des Peres.

Paterson, N. J.—West Paterson Improvement and Protective Association is urging construction of sewer.

Deming, N. M.—Construction of a sewer system is being considered by Council.

Brooklyn, N. Y.—North Corona Taxpayers' Association is urging construction of sewers in Corona.

Hempstead, L. I., N. Y.—Definite plans for sewerage system for Hempstead have been made by Civil Engineer Marshall.

Lawrence, L. I., N. Y.—Plans of various disposal plants are being considered by Committee on Sewers.

Long Island City, N. Y.—Construction of following sewers is being considered: Lefferts ave. from Liberty ave. to Ulster ave., cost $97,700; Lefferts ave. from Ulster ave. to Rockaway road, and storm water sewer in Rockaway road, from Lefferts ave. to Parson ave., $115,900; Panama st. from Blake ave. to Rockaway road, $90,700; Panama st. from Vienna ave. to Blake ave., $83 400; Panama st. from Cozine ave. to Vienna ave., cost $111,800; open drain in Panama st. from Jamaica Bay to Cozine ave., cost $67,700.

Millerton, N. Y.—Consulting Engineer Clyde Potts, 30 Church st., New York City, has been selected to prepare plans for sewer system and sewage disposal plant.

Watervliet, N. Y.—City Engineer Lamb has submitted to Council estimate for construction of storm sewer to cross the canal at Schuyler's bridge and to continue up 3d ave. to 5th st.; cost $4,000.

Rockymount, N. C.—Council is considering installation of sewage disposal plant.

Ashtabula, O.—Council has instructed Service Department to prepare plans for construction of a sewer in Middle st.

Cincinnati, O.—City Engineer Shipley has estimated cost of constructing sewers in three streets at $14,043.60.

Wilmington, O—Council is considering construction of sewer and drainage system; cost $90,000.—E. G. Bradbury, Columbus, Consulting Engineer.

Brownsville, Ore.—Main sewer will be constructed at cost of $1,500.

Dalles, Ore.—Louis C. Kelsey, Portland, will be selected as Consulting Engineer to prepare plans for proposed sewer system.

Beaver Falls, Pa.—Preliminary work on sewerage system which consists of survey, with plans and blue prints of all the proposed work as well as plans for the disposal plant, is to be done by one of the following engineering firms, which submitted bids as follows: Hering & Fuller, $3,000; Chester & Fleming, Pittsburg, $1,250; F. G. Ross, Pittsburg, $2 000; L. D. Tracy, Pittsburg, $1,640; Harrup, Hopkins & Taylor, $2,700; McBride Engineering Co., Pittsburg, $1,475; A. H. Schaffer, Ridgeway, $2,850; W. E. Miller, Pittsburg, $1,250; Philip Aylett, St. Louis, Mo., $1,190; G. A. Warner, State Highway Department, $1,450; J. S. Dodds, Minnesota, $2,450; F. M. Witherow, Columbia University, $900; E. O. Hudson, New York, $1,875; Edwin Hancock, Chicago, $1,000; T. C. Hatton, Wilmington, Del., $1,050; A. M. Allen, Cleveland, $3,850; E. B. Whitman, Baltimore, $2,150; H. T. Barker, New Brighton, $1,000; Ernest McCullough, Chicago, $900; J. B. Hogg, Pittsburg, $2,000; E. A. Kemmler, Columbus, $1,400; J. S. Warring, Crafton, $2,075; Rodgers & Latto, New York, $2,600; Mullen & Pealer, Indiana, Pa., $1,745; Clyde Potts, New York, $600; W. E. Sexton, Mineola, N. Y., $4,500.

Clifton Heights, Pa.—Council has adopted ordinance to increase the borough indebtedness $52.700; loan to be voted on at a special election; money is to be used for building sewerage system and municipal water works.

McKeesport, Pa.—Mayor Arthur has signed resolution instructing City Engineer to proceed at once with work of preparing plans for comprehensive sewer system, as required by State Board of Health.

West View, Pa.—Bids have been returned unopened for construction of main sewers and disposal plant.—H. L. Donaldson, Borough Secretary; Trimble & Miller, 4th ave., Pittsburg, Engineers.

Williamsport, Pa.—Carroll P. Bassett, expert engineer, who was employed by city to determine proper method of relieving Ninth Ward from long standing Grafius Run nuisance, has reported that proper and best method of relieving situation is to construct 7-ft. circular conduit from Penn st. down the valley of Old Run, and when time comes to provide outlet for Church st. sewer, to build three 6-in. sewer up Penn st. from Church to Grafius Run and send the water down run sewer instead of taking it down Penn, under Reading Railroad to the river; cost about $22,000.

Dallas, Tex.—Plans and specifications for installation of storm sewer on Swiss ave. between Peak st. and Pacific ave. have been adopted by City Commissioners as presented by Commissioner Doran.

Fort Worth, Tex.—Plans are under consideration for large sewer to be constructed jointly by city and packeries.

Charlottesville, Va.—Installation of sewerage system, cost $85,000, is being considered.—L. T. Hanckel, Mayor.

Kennewick, Wash.—Hanford Blackwell, Alaska Bldg., Seattle, have completed plans for proposed $60,000 sewer system.

Spokane, Wash.—Council is considering construction of proposed First Ward subtrunk sewer, District No. 17.—C. A. Fleming, City Clerk.

Toppenish, Wash.—Citizens will vote Nov. 8 on $35,000 bonds for construction of sewer system.

Esquimalt, B. C., Can.—Installation of sewer system is being considered.

Victoria, B. C., Can.—Extensive additions to city's sewerage system have been recommended by City Engineer in his report; extensions are to cost $235,000.

CONTRACTS AWARDED

Denver, Col.—Subdistrict No. 2 of South Capitol Hill Storm Sewer District No. 2, to Westcott-Doan Investment Co., $4,752.35; other bidders: Denver-Pueblo Construction Co., $4,987.69: Municipal Construction Co., $5,183.54; John B. Hughes, $5,225.37; Seventh Avenue Special Sanitary Sewer District, to Westcott-Doan Investment Co., $7,894.41; other bidders: Dillon Stone Co., $9,515.53; Denver-Pueblo Construction Co., $9,866.65; Municipal Construction Co., $10,268.21; John B. Hughes, $10,873.43.

Moline, Ill.—Sewers and water mains on 18½ st. and 23d ave., to C. A. Berglund; sewers, $798.50 and $1,114.

Cedar Rapids, Ia.—Laying 6-in. sanitary sewer in two avenues and 8-in. in alley between Aves. B and C, to Dearborn & Jackson; 50c. per lin. ft. for 8 and 6-in. pipe, $30 for manholes, $4 per cu. yd. for extra concrete and $2 per cu. yd. for extra sand.

Louisville, Ky.—Construction of section B of the Frankfort ave. sewer, to James Ferry & Sons, Pittsburg, by Louisville Commissioners of Sewerage, approximately $25,000.

Bloomfield, N. J.—Proposed Watsessing storm sewer, to Jas. J. Boylan, $10,781.50; this is $1,468 less than original bid of two weeks ago.

Jersey City, N. J.—Sewer in Stegman st., to Chas O'Neil.

Binghamton, N. Y.—Construction of sewers, Terrell ave., to C. W. Rose, $797.50; Wheeler ave., to George Serifina, $418.07.

Bristol, R. I.—To Luke H. Callan for extending sewer system in the eastern part of town; about $32,000.

Pasco, Wash.—Building sewer system, to Newport Engineering Co., $66,255.55.

Oshawa, Ont., Can.—Extension of outfall sewer, to W. T. Gibson, Port Hope, Ont., $5,300; other bidders: T. Reid, Brantford, $6,100; McKnight Construction Co., Toronto, $6,216; J. W. Ritton, Kingston, Ont., $6,350; J. Hartnett, Toronto, $5,737.—Frank Chappell, Engineer in Charge.

BIDS RECEIVED

West Liberty, Ia.—Bids received Oct. 25 for (a) six miles of sanitary sewer, and (b) disposal plant, as follows: C. R. Nichols, Caney, Kan., (a) $21,874.40, (b) $6,780.74; C. R. McKay, Omaha, Neb., (a) $22,682; Ottawa Construction Co., Ottawa, Ill., (a) $22,861; Guy E. Smith, Indianola, (a) $23,263.60, (b) $8,707.44; J. W. Turner Improvement Co., Des Moines, (a) $23,370, (b) $7,913.10; Independent Construction Co., Davenport, (a) $24 886, (b) $7,129.16; Dearborn & Jackson, Cedar Rapids, (a) $25,362, (b) $9,571.17; M. Conroy & Co., Des Moines, (a) $25.718.10; R. C. De la Hunt, Cedar Rapids, (a) $25,933.20, (b) $8,640.31; E. L. Dimick, Laurel, Neb., (a) $26,246.60; W. D. Yeager, Cedar Rapids, (a) $26,977.60; Thos. Carey & Son, Clinton, (a) 28,737; Lytle Construction Co., Sioux City, (a) $28,951; Pastoret & Lawrence, Duluth, Minn, (a) $29,885, (b) $10,769.04; O'Farrell Contracting Co., Dubuque, (a) $30,109.20, (b) $8,300.10; Cook Construction Co., Des Moines (b) $8,857.96; E. L. Dimick, Laurel, Neb., (b) $11,489.91; A. Romaine, city, (b) $7,478.43; J. A. Dahlsad, Waukon, $7,728.59; O'Farrell Contracting Co., Dubuque, (b) $8,300.10.—Chas. P. Chase, Clinton, Engineer.

New York, N. Y.—Constructing sewers and appurtenances in Westchester ave., be-

Muskogee, Okla.—Bids were opened Oct. 17 by T. P. Clonts, City Engineer, for the construction of the Junction Ave. storm sewer in Dist. 12, on brick, Class A and Class C concrete; Class A concrete is of broken limestone and Class C of gravel; the proportions of mixture are the same; bids are as follows: (a) Engineer's estimate; (b) Heman Construction Co.; (c) F. P. McCormick, lowest bid on brick and Class C concrete sewer; (d) James Ferry; (e) H. B. Nelson, lowest bid on Class A concrete sewer:

	a	*b*	*c*	*d*	*e*
1,826.9 cu. yd. common brick	$9.25	$9.25	$9.00	$9.00	$9.10
285.6 cu. yd. vitrified brick	12.00	12.00	11.75	11.50	12.00
1723.8 cu. yd. Class A concrete	8.00	8.00	8.00	8.25	7.80
Class C concrete	8.00	8.20	7.50	7.90	7.60
19,763 cu. yd. Class A excav.	.55	.55	.50	.57	.52
1,369 cu. yd. Class B excav.	.75	.75	.70	.80	.74
130 cu. yd. Class C excav.	3.00	3.00	3.00	3.20	3.00
71 sq. yd. asphalt pavt.	3.00	3.00	2.00	3.00	2.60
225 lin. ft. 12-in. inlet pipe	.45	.50	.45	.60	.45
360 lin. ft. 15-in. inlet pipe	.65	.75	.65	.75	.60
100 lin. ft. 24-in. inlet pipe	1.00	1.25	1.00	....	.95
53 manholes, 8 ft. and under, ea.	40.00	40.00	38.00	30.00	38.00
50 extra depth in manhole, ea.	3.00	3.00	3.00	4.00	3.00
4 standard intake basins, ea.	27.00	30.00	25.00	25.00	24.00
14 special intake basins, ea.	27.00	30.00	25.00	25.00	24.00
3,797 lin. ft. 12-in. storm sewer	.55	.55	.45	.50	.55
3,360 lin. ft. 15-in. storm sewer	.78	.80	.75	.70	.75
1,562 lin. ft. 18-in. storm sewer	1.10	1.00	1.10	.95	1.00
936 lin. ft. 21-in. storm sewer	1.52	1.50	1.50	1.45	1.48
2,686 lin. ft. 24-in. storm sewer	1.90	1.90	1.85	1.70	1.80
638 lin. ft. 27-in. storm sewer	2.57	2.55	2.50	2.50	2.50
484 lin ft. 30-in. storm sewer	3.26	3.25	3.15	3.20	3.26
1,855 lin. ft. 33-in. storm sewer	4.30	4.30	4.00	4.20	3.80
60 lin. ft. 8-in. c.-i. pipe	1.25	1.25	1.25	1.50	1.20
Total for Brick and Vitr. Sewer Pipes	$60,146	$60,147	$57,069	$58,047	$57,521
Total for Class A Concrete	57,131	57,132	54,501	56,065	54,429
Total for Class C Concrete	57,131	57,476	53,639	55,462	54,085

tween Zerega ave. and Castle Hill ave., and in Clover ave., between Westchester Ave., Lyon ave., and in Dorris st., between Westchester ave. and Summit north of Westchester ave., and in Ludlow ave., between Pugsley ave. and Zerega ave., and in Castle ave., between Ludlow ave. and Havemeyer ave., and in Westchester ave., between Pugsley ave. and Olmstead ave.: F. V. Smith Construction Co., $85,185; Vox Hennesey, $82,917; Aneita Construction Co., $78,443; Alame Construction Co., $81,761; Perille & Shields, $82,011; Briggs & McLoughlin, $83,523; Geo. H. Dunn, $68,372; J. J. Shea Contracting Co., $59,147; J. F. Higgins, $77,937.

Portland, Ore.—Riverside district sewer, which will drain a large portion of the peninsula, George Gordon, lowest bidder, $129,783; other bidders, W. Lind, $132,533; K. G. Lundstrom, $153,739; Jeffrey & Bufton, $132,734; Paquet, Giebisch & Joplin. Joplin, $140,522.

WATER SUPPLY

South Fork, Ark.—Plans are being prepared for installation of 1,000,000-gal. mechanical filtration plant.

Del Mar, Cal.—T. S. Van Dyke is preparing to install system of water works.

Fullerton, Cal.—Domestic Water Co. has been purchased by Tarber Montgomery; mains will be extended.

San José, Cal.—Board of Fire Underwriters has made following recommendations: Additional pump of 7,000,000 gals. capacity and additional 150-h.p. boiler; providing of at least 25,000,000 gals. additional reserve storage and installation of 12 to 24-in. mains.

Washington, D. C.—District Commissioners have ordered laying of 1,060 ft. of 12-in. water mains on Conduit road.—W. A. McFarland, Superintendent Water Department.

Daytona, Fla.—City will expend $2,500 in improvements to water works system, including installation of water softening plant, 200,000 gals. capacity; will erect 15x 20 ft. reinforced concrete building and construct concrete reservoir, capacity 90,000 gals.; cost $2,000.—George A. Main, Superintendent Water Works.

Sarasota, Fla.—City is considering $20,000 bond issue for water works and sewerage improvements.—J. Louis Houle, City Clerk.

Shoals, Ind.—Installation of water works and electric light plant is being considered.

Epworth, Ia.—Issuance of $10,000 bonds for installation of water system is being urged.

Quincy Centre, Ia.—Building of new supply tank is being considered.

Frontenac, Kan.—City will sell $15,000 bonds for extension of water system.

Lyons, Kan.—Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., will make recommendations for improvement of water supply.

Portland, Me.—New Hampshire Water and Electric Power Co. has been incorporated to establish, maintain and operate water works, reservoirs, etc.; capital, $200,000.—C. E. Gurney, President.

Brockton, Mass.—City has sold $17,500 water bonds to E. H. Rollins & Co.

Franklin, Mass.—Town has voted to extend water system on Central st. and on portions of two other streets.

Northampton, Mass.—Board of Water Commissioners is considering construction of third reservoir; cost about $250,000.

Flint, Mich.—Citizens will vote in November on $400,000 bonds for construction of water works system.

Duluth, Minn.—West Side Hillside Improvement Club will ask Water Board to extend mains into Hillside district.

Moorhead, Minn.—Council has decided to advertise for bids for 6, 8 and 10-in. artesian wells to be dug for city.

Kansas City, Mo.—Early installation of an independent system of high pressure water mains for fire protection in business district is urged by E. I. Farnsworth, of the Fire and Water Board.

Shelbina, Mo.—Mayor Allgaier has recommended installation of water and sewer systems.

Bladen, Neb.—Consulting Engineer Chas. F. Sturtevant, Holdrege, has about completed plans for proposed water and light plants; will soon ask bids.

Elmer, N. J.—Public Utility Commissioners are considering application of Elmer Water Co. for permission to issue $10,000 common stock and $30,000 bonds for construction of water works.

Morris Plains, N. J.—Installation of water supply system at Morris Plains State Hospital is being considered; cost $10,000.

Wharton, N. J.—Citizens will vote on purchase of Oram water supply system from Stewart M. Neff, of New York, for $45,000.

Cornwall, N. Y.—Election will be held Nov. 9 to decide if town will spend $30,000 to acquire land for new reservoir.

Coxsackie, N. Y.—Enlargement of water system is being considered.

Niagara Falls, N. Y.—National Board of Fire Underwriters has recommended installation of two complete pumping units at new pumping plant and corresponding addition to low-lift units and filters; also installation of number of distributing mains with valves and hydrants.

Troy, N. Y.—Board of Public Works is considering extension of water mains on Spring ave. to Linden ave.; cost about $7,500.

Fargo, N. D.—Council has authorized Water Committee to construct additional reservoir and also to bore some artesian wells.

Akron, O.—Proposition to issue $750,000 of bonds to build new water works plant to take place of the one now operated by the Akron Water Works Co., composed of Detroit capitalists, has been defeated.

Celina, O.—Board of Public Affairs has rejected all bids for water works extension; new bids will be asked.

Cincinnati, O.—Water Works Superintendent Laidlaw has sent specifications for the manufacture and laying of water mains in the former village of Delhi to Public Service Director Sundmaker; estimated cost $91,000.

Jacksonville, Ore.—City has sold $30,000 bonds for water system.

Newport, Ore.—City will purchase 1,000 ft. of galvanized pipe, ¾-in., and fittings.

Big Run, Pa.—Borough has passed ordinance authorizing the Gourley Water Co. to construct, maintain and operate system of water works.—Merle M. Hamilton, Borough Clerk.

Clifton Heights, Pa.—Council has decided to call election on $52,700 for water works and sewerage.

Gettysburg, S. D.—City has sold $18,000 bonds for construction of proposed water works.—Tuttle & Pike, Shubert Theater Bldg., Kansas City, Mo., Engineers.

Morristown, S. D.—Citizens have voted $10,000 bonds for construction of system of water works.

Cotulla, Tex.—City will grant franchise for water works.—C. F. Burkley, Mayor.

Lockhart, Tex.—Citizens of Maxwell have made arrangements to secure water works.

Lyford, Tex.—City is considering installation of water mains and stand pipes.—B. D. Stevenson, Mayor.

Wortham, Tex.—City will construct water works; cost $8,000.—G. F. Anderson, Mayor.

Logan, Utah.—Improvement of water system is being considered.

Frederic, Wis.—Citizens will vote on $2,000 bonds to build steel tower and tank.

Biggar, Sask., Can.—City proposes to expend about $15,000 for water works improvements.—J. Lukey, Secretary-Treasurer.

Brandon, Man., Can.—Ratepayers will vote upon water works by-law to issue $50,000.

Chippewa, Ont., Can.—Ratepayers have defeated proposed $30,000 water works by-law.

Rouleau, Sask., Can.—City has voted $45,000 for installation of water works system.

CONTRACTS AWARDED

Opelika, Ala.—Constructing water works, to McCrary & Co., Atlanta, Ga.

Fort Oglethorpe, Ga.—To George Becking, Chattanooga, Tenn., $4,351 for connecting up Well No. 4.

Highland Park, Ill.—To Lanyon & Clifford, $1,799.35, for construction of c.-i. lateral main water supply pipe along Woodland ave. and Kincaid st.—Wm. M. Dooley, President.

Moline, Ill.—Water mains and sewers, to C. A. Berglund, (a) 18½ st., (b) 23d ave.: water mains, (a) $1,287.30, (b) $1,020; sewers, (a) $798.50, and (b) $1,114.

Fort Howard, Md.—To James A. Boas, Philadelphia, Pa., $5,600 for construction of three reinforced concrete cisterns and piping nd connecting same with sewer system.

Amesbury, Mass.—By Water Commissioners, to Frank A. Doe, for construction of cement pumping station at Ring's Corner.

Medway, Mass.—To F. A. Hondlitte & Son Co., Boston, for construction of new water works; cost $90,000.—E. Worthington, Dedham, Engineer.

Rockport, Mass.—Boilers for Rockport water department to be installed at pumping station, to L. E. Smith, city; contract was first awarded to Robb-Mumford Co. of South Framingham, who withdrew.

Asheville, N. C.—By City Reservoir Commission, to Geo. H. Davidson, of Davidson & Colvin, to replace the water-tight bottom of the reinforced concrete reservoir with steel, area of 18,000 sq. ft.; cost $10,000.—B. M. Lee, City Engineer.

Chambersburg, Pa.—Building gravity water conduit, to H. C. Brooks Co., Clarksburg, W. Va., 150 working days, field route, $39,053.

Wheeling, W. Va.—Furnishing pipe for constructing water system on top of Wheeling Hill, to Massillon Iron and Steel Co., Massillon, O.; pipe, $23.50 per ton; fittings, $55 per ton; total $4,000; hauling pipe, to Jos. Reass & Son, 83c. per ton.

East Milwaukee, Wis.—Laying water mains, hydrants, etc.: 1,738 ft. of 8-in. water mains, hydrants, to O'Donnell Bros., National ave., Milwaukee; over 4,000 ft. of 6-in. water mains, hydrants, etc., to H. Hohensee, 27th st., Milwaukee.—Theo. B. Olsen, Village Clerk.

BIDS RECEIVED

Evansville, Ind.—Pumping machinery for new filtration plant: Carpenter Co. of Ohio, $31,500, without including girders which would cost $3,000 additional; Allis Chalmers Co., Milwaukee, $40,500; Worthington Co., Lockport, N. Y., $41,500; Holly Co., Lockport, $48,500.

Marion, Ind.—New boiler for water works: McMaul Boiler Mfg. Co., Toledo, O., $2,525; Superior Boiler Works, Marion, $3,300; Babcock & Willcox, Chicago, Ill., $3,728.

Brooklyn, N. Y.—Cleaning water mains in Brooklyn Borough, (a) Donlon Contracting Co., 84 Broadway, Brooklyn, $57,917. (b) Beaver Engineering and Contracting Co., 26 Exchange pl., New York City, $68,914: 9,000 lin. ft. 12-in. pipe, (a) 41c., (b) 38c.; 40,000 lin. ft. 8-in. pipe, (a) 33½c., (b) 35c.; 142,000 lin. ft. 6-in. pipe, (a) 26½c., (b) 30c.; 5 cu. yds. brick masonry, (a) $5, (b) $15; 5 cu. yds. concrete masonry, (a) $5, (b) $8; 1,000 ft. B. M. lumber, (a) $18, (b) $30; 1,700 sq. yds. asphalt pavement, (a) $2, (b) $3.50; 10 sq. yds. asphalt block pavement, (a) $2, (b) $3.50; 500 sq. yds. granite pavement, (a) $2, (b) $1.90; 75 sq. yds. Belgian pavement, (a) $1, (b) $1; 10

sq. yds. Medina pavement, (a) $2, (b) $3.50; 25 sq. yds. wood block pavement, (a) $2, (b) $4; 10 sq. yds. brick pavement, (a) $1, (b) $3; 30 sq. yds. cobble pavement, (a) 30c., (b) 60c.; 10 sq. yds. macadam pavement, (a) 50c., (b) 60c.; 1,000 cu. yds. extra exc., (a) 50c., (b) $1.25; 15 cu. yds. rock excavation, (a) $1, (b) $10; 100 lin. ft. vit. pipe sewer, (a) 25c., (b) $1.50.

LIGHTING AND POWER

Camp Hill, Ala.—Citizens have voted $17,000 bonds for electric light plant; survey, specifications and water power are already at hand.

Marion, Ala.—Light and power plant has been sold to Selma Light and Power Co.; plant will be enlarged.

Phœnix, Ariz.—The Water Users' Association has had plans prepared for electrical equipment necessary to establishment of a power plant.

Alameda, Cal.—City will install electroliers on Burbank st.

Los Angeles, Cal.—Board of Public Works has requested authority to supply electricity to inhabitants of Independence from one of city's aqueduct power plants in Inyo County.

Oroville, Cal.—The Oro Water, Light and Power Co. is considering construction of power plant on Yellow Creek in Humbug Valley.—R. Leo Van der Naillen, Manager.

Palo Alto, Cal.—Board of Public Works has adopted specifications for transformers for municipal electric light plant; bids will be asked.

Porterville, Cal.—Porterville Interurban Electric Railroad Co. will erect a power plant on Cinder Ranch to supply electricity to operate its proposed electric railway; system will radiate from Porterville.

Redwood City, Cal.—Residents of Menlo Park and Fair Oaks have organized lighting district and will establish electric lighting system.

Richmond, Cal.—California Gas and Electric Co. will erect gas receiving reservoirs at 5th st. and Chanslor ave.

Santa Barbara, Cal.—Santa Barbara Gas and Electric Co. will construct transmission line carrying 10,000 volts from its power station on Castillo st. to substation in Montecito; cost $10,000.

Daytona, Fla.—Citizens have voted to grant franchise to Homer J. Smith for gas plant.—A. McF. Porter, City Clerk.

Americus, Ga.—Citizens will vote Nov. 8 on $65,000 bonds for building municipal electric light plant and extending sewerage system.

Grangeville, Ida.—Grangeville Light and Power Co. has tendered proposal to Council to increase lighting system of city at lower rate than charged at the present time, providing five-year contract will be entered into.

Farmland, Ind.—William Davis, Milo Pegg and the Rev. R. P. Arrick, Town Councilmen, are inspecting light plant before buying one for Farmland; town has no lights.

Marion, Ind.—City has sold $75,000 bonds for construction of lighting plant to Fletcher American National Banking Co. of Indianapolis.

Marion, Ind.—Council has passed resolution authorizing Board of Public Works to proceed with plans for construction of municipal lighting plant along lines set forth in specifications about to be filed.

Shoals, Ind.—Installation of electric light plant and water works is being considered.

Cedar Falls, Ia.—Boulevard system of street lighting is being strongly agitated; number of business men are working for its installment.

Gypsum, Kan.—Citizens have defeated proposition to issue $9,000 bonds for purchase of electric lighting plant of Gypsum Light and Power Co.

Bay City, Mich.—State Railroad Commission has granted permission to Bay City Power Co. to issue $500,000 bonds for extensions to its system, including the purchase of additional machinery.

Interlochen, Mich.—Harlin Brown is preparing plans for construction of a hydroelectric power plant for supplying electricity for lamps and motors in the towns of Mesick, Buckley, Wexford, Glangarry, Harrietta, Interlochen and Traverse City and surrounding districts.

Foley, Minn.—Franchise has been granted to E. F. Collins to install acetylene gas lighting plant.

Lakefield, Minn.—Council is considering enlargement of municipal electric light plant, including installation of new generator.

Drexel, Mo.—A. J. Harbison will construct electric power plant.

Bladen, Neb.—Consulting Engineer Chas. F. Sturtevant, Holdrege, has about completed plans for proposed light and water plants; bids will soon be asked.

Bernardsville, N. J.—Bernardsville Water Co. has offered to furnish electric incandescent lamps of 30-c.p. instead at $15 each per year; company also agrees to keep fixtures and lines in repair and to renew lamps without charge.

Plainfield, N. J.—Board of Trade has appointed committee, Mayor Chas. J. Fisk, Chairman, to take up question of better street lighting for business section.

Troy, N. Y.—Geer Hydroelectric Co. will build power plant on Burden Pond; steel flume 42-in. diameter will connect Smart Pond and Burden Pond.

Williamsville, N. Y.—Village Board of Trustees has granted franchise for electric lighting and furnishing electric current for power to George E. De Galia, Buffalo.

Jackson, O.—Bids have been rejected by Trustees of Public Affairs for furnishing material and enlarging and improving municipal electric light plants; new bids will be received.

Carter, Okla.—J. A. Corbell, Lock Box 12, desires correspondence with manufacturer of gas outfits for lighting, heating and cooking; for 100 houses; will require 500 lights.

Enid, Okla.—City Commission is considering establishment of 28 ornamental lights; Gas and Electric Co. has offered to furnish equipment and lights for $79.97 each.

Hollis, Okla.—City has let franchise for electric plant of from 20 to 30 street lights.

Forest Grove, Ore.—A. Welch, Portland, has been granted franchise for power and electricity.

Hillsboro, Ore.—Hillsboro water and light plant has been sold to A. Welch, Portland; extensive improvements and betterments are contemplated.

Dillsburg, Pa.—Charter has been granted to Dillsburg Light, Heat and Power Co. to manufacture electricity; capital $15,000.—M. E. Kunkel, Dillsburg, and J. J. Logan, York, Incorporators.

Southampton, Pa.—Citizens are discussing propriety of placing electric lights in their streets.

Providence, R. I.—Plans for practically doubling capacity of Manchester street power house of the Rhode Island Co. have been made public by General Manager A. E. Potter; cost of the new equipment and changes in the building will not be less than $300,000; contracts for machinery and piping probably will be awarded within next 30 days.

Humboldt, Tenn.—R. Lee Reaves, I. H. Dungan and T. E. Bobbitts are considering constructing water-power electrical plant; plan involves construction of two boats to form race and be anchored in stream.

Cotulla, Tex.—City will grant franchise for electric light, water and ice plants.—C. F. Burkley, Mayor.

Fort Worth, Tex.—J. R. Nutt, Cleveland, O., who has just taken over electric franchise and other holdings of Fort Worth Light and Power Co. and electric properties of the Fort Worth Gas Co. will immediately install a central electric power plant which will have a capacity of 22,000 h. p.; plans for this plant and other improvements call for expenditure of approximately $2,000,000.

Taylor, Tex.—Taylor Gas Co. desires data, prices, etc., on industrial gas appliances, water heaters, lighting fixtures, self-lighting burners, etc.

Husum, Wash.—Husum Power Co. is considering the construction of concrete dam.—J. T. Thompson, Manager.

Prairie Du Sac, Wis.—Wisconsin Power Co. is preparing for construction of hydroelectric power plant on Wisconsin River.—Magnus Swenson, Madison, President.

Sherbrooke, Que., Can.—Plans are being prepared by Messrs. Ross & Holgate, Montreal, for construction of a new power house on the Magog River; proposed plant will develop about 3,000 h. p.

Stratford, Ont., Can.—Light and Heat Commission is considering alterations to old electric power station; Architect Hepburn has prepared plans and tenders will be called.

CONTRACTS AWARDED

Opelika, Ala.—Constructing electric light plant, to McCrary & Co., Atlanta, Ga.

Brainerd, Minn.—To Teltz Engineering Co., St. Paul, to furnish Brainerd electric current for light and power for 10 years, 2½c. per kw.-hour.

BIDS RECEIVED

Walla Walla, Wash.—Preliminary bids for street lighting: Pacific Light and Power Co., only bidder; bid submitted on three, five and ten-year basis for arc lights and for the three-cluster lights such as are installed on Main st. between 5th and 6th; three-year contract: Not less than 167 arcs, each per year, $75; three-cluster, 60-watt Tungsten lamps, each per year, $36; five-year contract: Arcs, each per year, $70; cluster, each per year, $33; ten-year contract, arcs, each per year, $67; clusters, each per year, $30.

FIRE EQUIPMENT

Los Angeles, Cal.—Plans will be prepared by city for erection of $18,000 engine house at Washington and Arlington sts.

Los Angeles, Cal.—Committee composed of Prof. C. L. Corey, dean of Electrical Department of State University; Theodore B. Comstock, Engineer of Public Utilities Commission, and E. F. Scattergood, Electrical Engineer of Aqueduct, will make recommendations concerning proposed reconstruction of fire and police signal system.

Los Angeles, Cal.—Council has been asked by Fire Commission to invite bids for one 80-h.p. combination chemical and hose wagon, four 54-h.p. chassis for hose wagons, two 80-h.p. city service trucks, and one 90-h.p. 65-ft. aerial truck.

San José, Cal.—Board of Fire Underwriters has recommended immediate purchase of 2,000 ft. of 2½-in. hose; also installation of modern second-size engine and one motor propeller chemical engine; also combination wagon.

Colorado Springs, Col.—Council has decided to purchase chemical engine.

Macon, Ga.—Fire Committee is considering purchase of two auto chemical engines, an auto pump engine and combination hose wagon.

Bartonville, Ill.—Volunteer fire department has been formed.—A. S. Guppy, Chief.

Dunkirk, Ind.—Plans have been adopted for erection of proposed fire hall. Address Councilman Kennedy.

Swayzee, Ind.—Volunteer fire department has been formed.—M. T. Buend, Chief.

Des Moines, Ia.—City will purchase fire hose at cost of $3,000.—Wm. Burnett, Fire Chief.

Louisville, Ky.—Board of Public Safety has recommended erection of fire house at 34th st. and Rudd ave.; also establishment of additional hook and ladder company for the highlands.

Lake Charles, La.—Council has decided to purchase hose cart and auto for fire department.

Cockeysville, Md.—Marble Hill fire department is considering purchase of auto fire truck.

Boston, Mass.—Mayor Fitzgerald has approved appointment by the Fire Commissioner of Messrs. Parker, Thomas & Rice as architects for new repair and construction shops of fire department.

Taunton, Mass.—Council will consider purchase of motor combination chemical and hose wagon.

Jersey City, N. J.—Fire Board has decided to equip new engine house in the Greenville section with automobile combination chemical engine and hose wagon, first size steam engine and 1,700 ft. of fire hose.

Roosevelt, N. J.—Special Committee will purchase $4,000 auto supply truck.

East Syracuse, N. Y.—Village will purchase 500 ft. of hose. Address Chief Engineer Van Alstine, Fire Department.

Kenmore, N. Y.—Alert Hose Co. has accepted plans for erection of fire hall.

Niagara Falls, N. Y.—Board of Fire Underwriters has recommended that Hose No. 2 be provided with 9,000-gal. engine; that hose wagon with turret nozzle and deluge set and carrying 1,000 ft. of 3-in. hose be placed in reserve; that company equipped with 700-gal. engine be established at Buffalo ave. and 27th st.; also purchase of 1,500 ft. of hose annually and minor equipment.

Poughkeepsie, N. Y.—Architect Geo. R. Freeman will prepare plans for proposed headquarters for Arlington fire department.

Xenia, O.—Purchase of 1,000 ft. of fire hose is being considered.

Klamath Falls, Ore.—Citizens will vote Nov. 14 on $8,000 bonds for purchase of fire apparatus.

Harrisburg, Pa.—Council is considering $800 appropriation for repairs to Allison hook and ladder truck.

Hazleton, Pa.—City needs 1,000 ft. of hose according to Board of Fire Underwriters.

Philadelphia, Pa.—Bids will soon be asked by Director Clay for autos for 11 district fire engineers; motor chemical engines will also replace horse-drawn equipment; chemical and hose auto will be supplied for two fire houses.

Alexandria, Va.—Board of Aldermen has directed Committee on Police and Streets to consider the advisability of installing a fire alarm and police call system, and also combination police patrol and ambulance.

North Yakima, Wash.—Bids will again be asked for erection of $12,000 fire station from plans by Architect Weatherwax.

Milwaukee, Wis.—Movement has been started to combine fire and police alarm systems and to concentrate both in city hall.

Racine, Wis.—Special Committee, Alderman Ritter, Chairman, is inspecting police electric fire alarm systems.

CONTRACTS AWARDED

Tampa, Fla.—Building Hyde Park fire station, to Dekle & McGucken, $6,895.

Laporte, Ind.—Auto fire truck, to Seagrave Co., Columbus, O., $5,000.

Newark, N. J.—Furnishing combination gasoline ambulance and patrol wagon for local police department, to White Automobile Co., New York, $3,000.

Charlottesville, Va.—To Ergenbright & Sadler, for furnishing 24 helmets and 18 rubber coats to fire department.

Spokane, Wash.—Second size fire engine, to the Gorham Rubber Co., Seattle, representing W. S. Nott & Co., Minneapolis, $6,125.

BIDS RECEIVED

New York, N. Y.—Repairs to quarters of Engine Co. 84, located at 513 W. 161st st., Samuel Rosen, 617 E. 135th st., Bronx, $1,765; Kerr & Krenkel, 205 W. 30th st., Manhattan, $1,687; M. D. Lundin, 402 Columbus ave., Manhattan, $1,477; Edmund D. Broderick, 1382 Lexington ave., Manhattan, $895; Joseph Balabon, 2065 Ryer ave., Bronx, $1,210; S. A. Kessler, 251 E. 66th st., Manhattan, $1,954.

BRIDGES

Hartwell, Ga.—Hart County will vote on $40,000 bridge and road bonds.

Rock Island, Ill.—City will ask for bids for replacing two of Rock River bridges; plans by Engineer Wallace Treechler.

Richmond, Ind.—Commissioners of Wayne County are planning to spend $20,000 the coming year on bridges.

Cedar Rapids, Ia.—Citizens will vote Nov. 8 on $50,000 bonds to erect bridge across Adar River.

Topeka, Kan.—Jas. O'Connor & Son have rejected contract awarded for Melan bridge extension; city will make new estimates and readvertise for bids.

Wichita, Kan.—Building of bridge across Little River at head of Billing ave. is being urged by residents of Riverside Park.

Louisville, Ky.—Plans for Underhill st. bridge, to be built of steel and concrete, across Beargrass Creek at Underhill and Kentucky sts., have been completed.

New Bedford, Mass.—City has awarded $38,000 Taunton Great River bridge bonds and $50,000 municipal bonds to E. H. Rollins & Sons.

Detroit, Mich.—County Commissioners have rejected bids for erection of proposed 14th ave. bridge; $26,500 available.

Saginaw, Mich.—Board of Works has been instructed to prepare plans, specifications and detailed estimate of cost of a reinforced concrete bridge on Court st., over Linton Lake, same to have five arches of reinforced pile foundation.

Jefferson City, Mo.—Board of Commissioners of Cole County is having plans prepared by Engineer E. F. C. Harding for three concrete and steel bridges.—C. A. Dierckx, County Clerk.

New Bloomfield, Mo.—Callaway County Commissioners will have plans prepared by Engineer W. P. Divers, Fulton, for concrete and steel bridge; cost $1,500.—W. R Taylor, County Clerk.

Albion, N. Y.—Construction of concrete bridge across Oak Orchard Creek at Kenyonville is being considered; also one at Two Bridges.

Carlton, N. Y.—Town will vote Nov. 15 on erection of two bridges over Oak Orchard Creek; cost $6,800 and $6,000.

Niagara Falls, N. Y.—Taxpayers of the Town of Niagara will pass upon question of whether or not they shall build new bridge over Cayuga Creek, near La Salle, work recommended by State Highway Commission in connection with Buffalo-Falls blvd.

Yonkers, N. Y.—Board of Contract and Supply has ordered bids advertised for construction of bridge over Nepperhan River.

Enid, Okla.—City Commission has decided to erect two large concrete bridges over Boggy Creek.

Portland, Ore.—City Engineer Morris has been instructed by Street Committee of Council to prepare estimates of cost of building steel bridge across Willamette River with approaches located at Ellsworth st. on east side and Meade st. on west side.

Centre Valley, Pa.—Bridge, cost $4,000, will be erected.

Burnet, Tex.—Burnet County will vote on $18,000 bonds for construction of bridge.

Fort Worth, Tex.—County Commission will ask for bids for erection of two bridges.

Park City, Utah.—Erection of bridge across Sever Creek has been ordered by Council.

Northport, Wash.—County Commissioners and city are considering joint erection of bridge over Columbia River.

CONTRACTS AWARDED

Colusa, Cal.—To Joe Manor for building Indian Creek bridge, $2,150; dam over concrete bridge across Sycamore Slough, to Dan Ainger, $1,300.

Hartford, Conn.—To F. Arrigoni & Bro., to rebuild the abutments for bridge on the Valley division at North Cromwell.—Fred. L. Ford, City Engineer.

New London, Conn.—To Mayor B. F. Mahan for construction of bridge across Four Mile River.

Lawrenceville, Ill.—Concrete and steel bridge in Christy Township, to Vincennes Bridge Co., $2,750.

Martinsville, Ind.—To E. O. Gilbert, city, for construction of two concrete arch bridges, $6,031.

Petersburg, Ind.—To A. H. Kinman, for repairing of bridge across Patoka River, $5,350.

Shelbyville, Ind.—Building St. Paul bridge over Flatrock River, to Lafayette Bridge Co., $4,049.

Vernon, Ind.—To National Concrete Co., Vernon, for construction of four bridges in Jennings County.

Plymouth, Pa.—For Plymouth bridge connecting town with Breslau on east side of the Susquehanna River, to Penn Bridge Co., Beaver Falls, $276,973.

Dallas, Tex.—Furnishing cement to be used in construction of the Dallas-Oak Cliff viaduct, by Commissioners' Court, to Southwestern States Portland Cement Co., city; 55,000 bbls. of cement, $1.48 per bbl., with 10c. per sack refund for all sacks returned in good condition.

Waukesha, Wis.—To Walter Blake Construction Co., Fond du Lac, for construction of proposed concrete bridge over Fox River at the foot of Broadway, $4,960.

BIDS RECEIVED

Chico, Cal.—Construction of bridge over Little Chico Creek, Chico Construction Co., $2,877; Maurice C. Cauchot, $2,844; C. G. Carson, $3,000.

New York, N. Y.—Repairing the fender on Willis ave. bridge, Wm. P. McDonald, $23,400; Phœnix Construction Co., $20,397; Goodwin Construction Co., $20,675; Riverside Construction Co., $18,218; N. Y. State Construction Co., $19,145; Barth S. Cronin, $18,490; New York Submarine Contracting Co., $18,570.

MISCELLANEOUS

Bentonville, Ark.—Benton County Commissioners have decided to erect jail.

Pasadena, Cal.—Board of Trade is urging election on $325,000 bonds for purchase of park grounds and erection of $125,000 casino.

Sacramento, Cal.—E. W. Hartman has submitted proposition to City Board of Trustees to build for city concrete floating wharf 300 ft. long by 100 ft. wide.

San Francisco, Cal.—Board of Supervisors has accepted offer of Whitcomb Estate Co. to erect temporary city hall, cost $450,000, on Market st.

Trinidad, Col.—According to plan and estimate submitted to Council by City Engineer Littleton it will cost $90,000 to construct new river channel.

Rome, Ga.—Council is considering plan of Floyd County Medical Society for erection of $40,000 city hospital.

Peoria, Ill.—Park Board will secure new plans for $12,000 pavilion to be erected in South Park.

Oakland City, Ind.—Plans have been prepared for erection of $2,500 city building.

Des Moines, Ia.—Council has decided to ask for bids and plans on Mayor Hanna's plan of flood protection.

Dubuque, Ia.—Dubuque County will vote Nov. 8 on erection of memorial hall.

Phillipsburg, Kan.—Phillip County will vote on $60,000 bonds to erect jail and court house.

Salina, Kan.—Preliminary plans have been prepared by Welmarth & Zerbe for erection of $40,000 city hall.

Topeka, Kan.—Plans and specifications for south side Kaw River dike, prepared by County Engineer V. R. Parkhurst, have been adopted by Board of County Commissioners composed of Frank Simms, Edwin L. O'Neil and James C. Shimer; cost of the completed structure will be in the neighborhood of $126,000.

Louisville, Ky.—Board of Public Safety has recommended that motor-drawn patrol be stationed at Central Station and five-passenger touring auto at Seventh Police District Station.

Boston, Mass.—Mayor Fitzgerald has approved appointment of Messrs. Swasey, Raymond & Page to furnish plans, specifications, estimates and superintendence of construction of ferryboat.

Gloucester, Mass.—Lee, Higginson & Co. have purchased $30,000 improvement bonds.

Haverhill, Mass.—Council is considering calling election on erection of $75,000 hospital.

St. Paul, Minn.—Police Department has asked $4,000 appropriation for automobile.

St. Paul, Minn.—Assemblymen W. C. Handy and D. H. Michaud and Aldermen George J. Ries and W. J. Troy have been named on Joint Council Committee to act on commission which will investigate and prepare plans for municipal garbage incinerating plant.

Columbia, Mo.—Boone County is considering erection of $30,000 jail. J. L. Henry is interested.

Camden, N. J.—Bids will be asked at once by Board of Health for erection of contagious hospital.—J. C. Jefferies, Architect; Dr. H. H. Davis, President.

Elberon, N. J.—Elberon Library Association is asking for bids for erection of $6,500 building.

Herkimer, N. Y.—State Highway Commission has been asked to build retaining wall along West Canada Creek.

St. George, S. I., N. Y.—Bids will be asked for in about a month for erection of garbage incinerating plant similar to one at West New Brighton.—George Cromwell, Borough President; Louis L. Tribus, Commissioner of Public Works.

Cincinnati, O.—Erection of $1,000,000 auditorium is being considered. E. V. Wilbern, President Hotel Managers' Association, is interested.

Columbus, O.—Engineer I. S. Osborn will receive bids in November for proposed supplementary garbage disposal plant; cost about $17,000.

Girard, O.—Trumbull County will vote on $50,000 bonds to erect jail.

Youngstown, O.—Addition, cost $40,000, will be erected to city hospital.—Geo. L. Fordyce, President Board of Trustees.

Portland, Ore.—Councilmen Watkins and Concannon, of Health and Police Committee of Council, have recommended to Council that the application of Portland Sanitary Garbage Co. for exclusive franchise for a term of 25 years to collect and incinerate garbage be denied; but decided that city should control gathering and incineration of its garbage by installing municipal system.

Rutland, Vt.—Addition, cost $5,000, will be built to city hospital.

Richmond, Va.—Grounds and Buildings Committee has recommended $50 000 appropriation for improvements to proposed new park.

Grand Rapids, Wis.—Bids will be received Nov. 16, noon, for $50,000 insane asylum bonds.—R. E. Andrews, District Attorney.

Racine, Wis.—City will install modern police patrol system.

Toronto, Ont., Can.—Board of Control has authorized Council to engage Rudolph Hering, of New York, N. Y., to prepare report on best methods to adopt for the incineration of garbage.

CONTRACTS AWARDED

Los Angeles, Cal.—By Board of Public Works, to the Pacific Creosoting Co., $5,000 for furnishing creosoted piling to be used in construction of the first section of municipal wharves, to be built in inner basin of Los Angeles Harbor, at Wilmington.

Louisville, Ky.—Building iron fences along Oak st. underpass, to Cincinnati Iron Fence Co., $1,564.87; other bidders: Imperial Wire and Iron Works, $3,129.75; Grainger & Co., $2,128.23; Balke & Co., $1,742.66, and the Dow Wire Co., $1,673.15.

Boston, Mass.—Mayor Fitzgerald has approved contract, without advertising, for purchase of one gasoline model GB White touring car, $2,500, less $500 to be allowed for car now used by department.

North Scituate, Mass.—Taking down and rebuilding the sea wall at North Scituate Beach, distance 1,050 ft., to James H. Ferguson, 22 Parkman st., Dorchester.

New Brunswick, N. J.—Erecting county building, to Geo. B. Rule, city, $104,830.

New York, N. Y.—Construction of pier from mainland to Cobb Dock, Pier D, Navy Yard, Brooklyn, to E. De V. Tompkins, 81 East 125th st., $75,940.

Woodsdale, O.—Council has awarded contract of hauling garbage and refuse out of corporation during ensuing years to Isaac S. DeGarmo, Greggsville, $600.

Philadelphia, Pa.—By the Reading Railway, in connection with elevation of the Port Richmond tracks of its system; to John McMenamin for filling and masonry, amounting to $117,425, for work between Kensington and Frankford Ave., and approaches to each; also for bridges over both these aves., to carry tracks, to American Bridge Company, $125,428.

Providence, R. I.—Public bathhouse in Franklin Park, to Patrick E. Harding, $10,000.

Fort William, Ont., Can.—Erecting $70,000 police station and court house, to M. H. Broden.

BIDS RECEIVED

Boston, Mass.—Disposal of garbage, 10 years, for all districts of city, except Charlestown, East Boston and West Roxbury, J. F. Beedle, only bidder, as follows: From Districts 1, 8 and 10, which include the city proper and South Boston, 85½c. per ton; from District 4, Brighton, $1.79 per ton; From Districts 9 and 6, which include Dorchester, 85½c. per ton; from District 7, Roxbury, $1.23 per ton; in addition to ashes, garbage, rubbish, etc., there are 12,000 tons of street sweepings a year; under proposal city must collect garbage, ashes, etc., and deliver the same at one of four stations; company will dispose of matter.

Roselle, N. J.—Building borough hall, Richter & Wyckoff, Elizabeth, lowest bidder, $18,400; Holley & Mellen, Elizabeth, $18,539; Emil Klov, Roselle Park, $18,850; Charles Morton, Roselle, $19,132; Lammerding-Devine Co., Elizabeth, $19,446; M. Byrnes Building Co., Elizabeth, $19,775; Jens Jensen Aagker, Elizabeth, $19,898; Charles Eilbacher, $21,259; H. P. Wright & Co., New York, $21,465; DeRiso Bros., Weehawken, $21,789; Central Chemical Construction Co., New York, $22 510.81; Reilly, Tullis & Blanchard, New York, $23,000; W. D. Lewis Co., Roselle, $23,093; Ruggles, Robinson Co., New York, $23,472; George Hildebrandt, New York, $23,739; W. H. Fissell & Co., New York, $24,900; William Pearsall, Oceanic, $26,499.

New York, N. Y.—Repairing the pier at Rossville, Staten Island, lowest bidder N. Cappiello, 367 Fulton st., Brooklyn.

Perrysburg, N. Y.—Construction of J. N. Adam hospital for incipient cases of tuberculosis, C. A. Hager, total $160,579 for construction of main building, power house and tunnel; Foster & Glidden Engineering Co., $16,500, for plumbing and heating, $61 lower than combined lowest bids on plumbing and heating taken separately; Foster & Glidden Co. made its bid on the basis of doing both jobs; Buffalo Electrical Co., $3,075, lowest on electrical work.

Saranac Lake, N. Y.—Winter collection of garbage, George West, Frank Nutter and R. H. Johnson bid $900, $898.87 and $800, respectively, but first two bids were for six months' work, while specifications called for but five months' collection; Johnson's bid was according to specifications; all bids rejected.

Syracuse, N. Y.—Redecorating Council chamber and several other rooms, E. U. Yorden & Co., $1,267; R. J. Brady, $1,594.44; O. L. Wood Decorating Co., $1,950; W. J. Graves, $1,754.60; A. F. Fieler, $1,865; the bids for remodeling the Bureau of Health offices were as follows on the mason work: D. Rafferty & Son, $915; John W. Gee & Son, $1,295; J. J. O'Hara, $1,197; Robert Montgomery, $995.

Philadelphia, Pa.—Construction and equipment of an anti-toxin laboratory at Holmesburg and for electric lighting cable for Philadelphia Hospital for Contagious Diseases, for the laboratory, Thomas Little & Sons, $3,235; John R. Wiggins & Co., $4,250, and Edward Fahy & Son, $3,461; for electric lighting, Walker & Keppler, $7,084.

Providence, R. I.—Building bathhouse in Franklin Park, P. E. Harding, building, plumbing, heating and ventilation and electric wiring, $10,000; William Williams, construction alone, $7,980; F. D. McKendall, construction alone, $8,766; Hartwell & Kingston, construction alone, $7,986 Famigletti Bros., construction alone, $7,950; W. H. Hamlyn & Son, construction alone, $7,950; following bids on plumbing were received: Thomas E. Manney, $1,839; M. F. Murphy, $1,439; the Narragansett Equipment Co. submitted bid of $1,600, but there was no check; for heating and ventilating, H. B. Smith Co. bid $839; Narragansett Equipment Co. sent a bid on this of $699, without certified check; no separate bids on electric wiring.

Seattle, Wash.—Three new street flushing machines to be delivered to the street department within the next 60 days. Pacific Coast Fire Supply Co., agreeing to furnish "Connelly" machines, $1,100 each; G. W. Evans & Co., three St. Louis automatic machines, $3,300, and Beall & Co., Portland, St. Louis machines, $1,150 each, and slightly lighter machines, $1,100 each.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
			STREET IMPROVEMENTS	
Washington	Seattle	Nov. 4, 10 a.m.	Asphalt and brick paving, sidewalks, drainage, curb & gut. etc.	C. B. Bagley, Sec'y. Bd. Pub. Wks.
New York	Kingston	Nov. 4, 7.30 p.m.	Grading W. Chester st., bldg. sewers in two sts., etc.	John T. Cummings, City Clerk.
Pennsylvania	Pittsburg	Nov. 7, 10.30 p.m.	Brick and asphalt paving, curb, etc., Univ. of Pittsbg., and bdge	Jos. G. Armstrong, Dir. Pub. Wks.
Oklahoma	Muskogee	Nov. 14, 5 p.m.	Asphalt paving, etc., Dist. No. 105, brick paving, etc., No. 107.	Charles Wheeler, Jr., City Clerk.
Pennsylvania	Nanticoke	Dec. 3, 7 p.m.	Paving 980 lin. ft. of W. Broad st.; brick or other material	Judson Abbott, Chm. Street Com.
Florida	Leesburg	Nov. 4,	Bldg. 7,000 lin. ft. concrete walks	Town Council.
			SEWERAGE	
New York	Kingston	Nov. 4, 7.30 p.m.	Bldg. san. sewer in Prince st., sewer and grad. W. Chester st	John T. Cummings, City Clerk.
Minnesota	Duluth	Nov. 4, 10 a.m.	Bldg. sanitary sewer in 56th alley, west, also in Third alley	Olof G. Olson, Pres. Bd. Pub. Wks.
Pennsylvania	Pittsburg	Nov. 7, 10.30 a.m.	Bldg. 51, 54, 57, 60 and 66-in. brick & 48-in. brick, concrete and blockstone sewers in 3 sts.; also 15-in. pipe, several sts	Jos. G. Armstrong, Dir. Pub. Wks.
Ohio	Lorain	Nov. 10	Bldg. sewers in W. 25th and 32d., and E. 34th sts., Livingston av	L. B. Johnston, Clk. B. P. Serv.
Ohio	Niles	Nov. 12, noon	Bldg. sanitary sewer in Hartzell ave. and Park Ave.	J. E. Tregaskis, Clk. Bd. Control.
			WATER SUPPLY	
Dist. of Col'bia	Washington	Nov. 9, 2 p.m.	Furnishing cast-iron water pipe and specials	C. H. Rudolph, Pres. Dist. Comrs.
Iowa	Lamotte	Nov. 15	Laying 3,100 ft. 4-in. water pipe. 7 hydrants and 4 shut-offs	N. A. Hoffman, City Recorder.
Iowa	Newton	Nov. 16	Constructing elevated tank to cost from $4,000 to $6,000	E. G. Finch, City Clerk.
			BRIDGES	
Indiana	Indianapolis	Nov. 7	Bldg. two bridges over Pogues Run; cost $5,000 each	F. J. Noll, Jr., Clk. B. P. Affrs.
			LIGHTING AND POWER	
Dist. of Col'bia	Washington	Nov. 12, 2 p.m.	Furn. & erect. elec. light plant at workhouse bldgs., Occoquan, Va.	C. H. Rudolph, Pres., Dist. Comrs.
			MISCELLANEOUS	
Virginia	Portsmouth	Nov. 14	Furn. 200 tons No. 1 size, 1st. qual. hard crushed stone, f.o.b. cty.	D. F. Appenzeller, Chm. 7th W.I.B.
Georgia	Tifton	Nov. 22	Erecting 3-story rein. conc. County Court House; cost $54,000.	Board of County Commissioners.

STREET IMPROVEMENTS

Denver, Col.—Bids are being asked for establishment of Improvement District No. 4; work includes grading and concrete curb and gutter; cost, $52,862.72.

Miami, Fla.—Dade County Commissioners have ordered Commissioner Winfield to have road in his district widened 15 ft. from center line.

Sanford, Fla.—Orange County will vote on $1,000,000 bonds to construct system of trunk lines of brick roads.

Indianapolis, Ind.—Board of Park Commissioners has decided to improve proposed 38th st. boulevard, from Northwestern to Capitol aves., with macadam, on recommendation of George E. Kessler, Landscape Architect.

Cincinnati, O.—County Commissioners are considering improvement of Liberty road.

Temple, Tex.—Specifications will be prepared for paving Main st. and French ave.; distance about ¾ of mile.

Portsmouth, Va.—Halsey & Co., of New York, will purchase entire issue of street and school improvement bonds.

Everett, Wash.—Board of Public Works is considering plans for proposed improvement of Hoyt ave.

Marcus, Wash.—Authority was given Street Committee to employ engineer to make survey of streets.

Seattle, Wash.—Bids will be readvertised for grading and filling Alti ave.; plans have been approved for grading and concrete walks on two streets.

Spokane, Wash.—County and State have appropriated $112,000 for road purposes.

Spokane, Wash.—Board of Public Works has recommended grading, curbing, parking and sidewalking of 37th ave.; cost, $10,000.

CONTRACTS AWARDED

Phoenix, Ariz.—Construction of road between Wickenburg and Morristown, distance little more than 20 miles, to F. B. Jacobs, $2,750; only other bidder, C. W. Platt, $3,000.

San Jose, Cal.—Improvement of Stone ave. and portion of Tully road to F. W. Wehner, $3,579; other bidders: San Jose Contracting Co., $7,992, and J. F. Adams, $4,862.50; road will be macadamized; time allowed 90 days.

Clyde, O.—Paving parts of Amanda and Buckeye sts. with "Deckman-Duty Brick," on concrete foundation, to J. L. Smith, Lorain, $1.41 per sq. yd.

Pittsburg, Pa.—Building Ardmore road, 2½ miles; also Guy's Run road, 1.4 miles, to Booth & Flinn, Ltd., Forbes st., Pittsburg, $47,843.

Puyallup, Wash.—Paving in District No. 23, to Warren Construction Co., $11,094.97.

Seattle, Wash.—Concrete walks on 10th ave., to N. D. Johnson, American Bank Bldg., $8,973.07.

Tacoma, Wash.—To Independent Asphalt Co. by Commissioner Owen Woods, to pave Cliff ave., $29,304; W. J. Murphy bid $31,157 and the Anderson Construction Co., $32,000; to lay cement sidewalks on S. 51st st., from Park ave. to South E st., to E. F. Marshall, $1,269; other bids: Wright & Sweeney, $1,276; J. F. Bachelor, $1,361; Erickson & Anderson, $1,333.

SEWERAGE

Sigourney, Ia.—Hall & Adams, Centerville, are preparing plans for $35,000 sewer system.—A. M. Neas, City Clerk.

Lake Charles, La.—Lake Charles Sewerage Board has passed resolution authorizing issuance of $160,000 sewerage bonds.

Port Jervis, N. Y.—Sewer will be constructed in Richard ave. in spring.

South Glens Falls, N. Y.—Consulting Engineers Harry Reynolds, city, and Louis Sebring, Schenectady, will make survey for sewer system and disposal plant; cost about $40,000.

Altoona, Pa.—Specifications have been completed for construction of sewer system at State Tuberculosis Hospital; cost, $20,000.

York, Pa.—Bids will be received by Highway Committee, Chairman Bahn, for constructing 30 in. brick sewer at Richland ave. and Princess st.

Seattle, Wash.—Board of Public Works has approved plans of construction of sewers on 15th ave. N. W.

CONTRACTS AWARDED

East San Jose, Cal.—A. L. Chambers, Oakland, for constructing brick storm sewer on Chase ave., $3,649.50.

Denver, Col.—Work in Sub-District No. 9 of East Side Sanitary Sewer District No. 1 to Municipal Construction Co., $22,167.94; other bidders: J. B. Hughes, $23,524.05; Dillon Stone Co., $25,893.35; Denver-Pueblo Construction Co., $25,121.21; Westcott-Doan Investment Co., $24,559.37.

BIDS RECEIVED

Lewiston, Ill.—Constructing sanitary sewer system; lowest bidder, Jas. E. Daily, Hammond, Ill., as follows: 11,781 ft. 8-in. tile, 58c. per ft.; 3,035 ft. 10-in. tile, 70c.; 992 ft. 12-in. pipe, 91c.; 1,273 ft. 15-in. tile, $1.00½; one septic tank, $2,250; one lamp hole, $8; two single flush tanks, each $50; eight connections for flush tanks, each $20; one-half of 6 double-flush tanks, each $32; 38 manholes with covers, each $39; total, $15,295—C. W. Brown, Jacksonville, Engineer.

Duluth, Minn.—J. D. O'Connell, low bidder on two sewers. $1,595 on sewer in Seventh st., and $1,554.80 on that in Seventh alley.

WATER SUPPLY

Benton, Ill.—Citizens' Water Supply Co. has been granted franchise to construct mains for water system to be used by Hamilton Utilities Co.

Patterson, La.—City has sold $30,000 water works bonds to Interstate Trust & Banking Co., New Orleans; plans by Fred. A. Jones Co., Houston, Tex.; work will be begun at once.—B. J. Morey, Mayor.

Lowell, Mass.—Water Board has voted to send communication to Council asking for a loan of $65,000 for new pump.

Bremen, O.—Construction of water works is being considered.

Heavener, Okla.—L. Y. McFarland, Bartlesville, will prepare plans for proposed water works; cost $50,000.

St. Augustine, Tex.—Citizens have voted bonds for construction of water works.

Christiansburg, Va.—Bids will be received Nov. 15 for $40,000 water works bonds.—E. S. Hagan, Mayor.

Colville, Wash.—Mayor Sax has appointed Committee to take immediate action on matter of securing greater water supply for city.

Montreal, Can.—Consulting Engineers Hering & Fuller have recommended installation of plain sand filters to supply 50,000,000 imperial gallons daily.

CONTRACTS AWARDED

Beecher, Ill.—Laying 5,770 ft. of 8-in. and 10,800 ft. 6-in. water mains to T. H. Iglehart, Rookery Bldg., Chicago.—J. E. Pickens, Schuyler ave., Kankakee, Engineer.

Mulvane, Kan.—Pipe and castings to the U. S. Cast Iron Pipe & Foundry Co., Chicago, Ill., $9,187; valves and boxes and hydrants to Iowa Mfg. Co., Oskaloosa, Ia., $1,132; laying pipe, setting hydrants and for pump house, wells, machinery foundations and placing pump to Lund, Keenan & McCarty, Ponca City, Okla., $7,096; 350-gal. per minute pump and motor to Dean Steam Pump Co., Kansas City, Mo., $1,678; 25-hp. gasoline engine to John Deere Plow Co., Chicago, Ill., $1,050; 50,000-gal. tank on 90-ft. tower to the Des Moines Bridge & Iron Co., Des Moines, Ia., $3,250.—J. S. Worley Co., Kansas City, Engineers.

Cincinnati, O.—Laying water main from 12th and Isabella sts., Newport, to standpipe, to Jos. Herman, $2,237.

Sultan, Wash.—Constructing water system to P. E. Cunningham, city, $11,995.

Superior, Wis.—Installing water connections on Grand and Cummings aves. to Stack Bros., $3,473 and $1,609.

BIDS RECEIVED

Springfield, Mass.—Supply of c. i. water pipe to be used by the city next year. Specifications called for 1,800 tons of c. i. pipe, ranging from 6 to 20 in. in diam., 2,000 pounds to ton, to be delivered f. o. b. in Springfield; lowest bid $22.30 ton, submitted by R. D. Wood & Co., Philadelphia; F. A. Houdlette & Son, Inc., Boston, bid $22.35; United States Cast Iron Pipe & Foundry Co., Philadelphia, $22.65; Warren Foundry & Machine Co., New York City, $23.75.

Dallas, Tex.—Construction of the pumping station at White Rock Reservoir: Hughes-O'Rourke Co., $38,535; Alex Watson, $40,640; H. J. Emmins, $41,208; Fred A. Jones Co., $42,990; Southern Construction Co., $41,183.

LIGHTING AND POWER

Coeur D'Alene, Ida.—Ray M. Hart has asked for 50-year franchise to install gas plant.

Monticello, N. Y.—Monticello Electric Light & Development Co. is planning to construct electric light plant; cost about $20,000.—B. A. Mapledoram, Chief Engineer.

Hamilton, O.—Seasongood & Mayer and Davis, Bertram & Co., Cincinnati, have purchased $195,000 improvement bonds; gas, electric light and water extensions will be made.

Abilene, Tex.—Council has under consideration proposition which has been made by local electric light company and also proposition submitted by Abilene Gas Co. for installation of elaborate decorative light system for entire city.

Buckhannon, W. Va.—Fire has partially destroyed plant of Buckhannon Light & Water Co.; plant is city water station, electric light plant and ice plant combined.

CONTRACTS AWARDED

Kenmore, O.—Contract has been closed between village and N. O. T. & L. Co. for lighting of the streets of that place; new system of lighting is to be introduced.

Winnipeg, Man., Can.—Supplying 5,000 lbs. No. 6 waterproof copper wire, 3,000 lbs. No. 8 waterproof copper wire and five miles galvanized iron wire with waterproof insulation to E. F. Phillips Electrical Works, Winnipeg.

FIRE EQUIPMENT

Phoenix, Ariz.—Council will call election on bonds to equip city with all fire apparatus needed for adequate protection.

Denver, Col.—Fire and Police Board is considering erection of three fire stations.

Jacksonville, Fla.—Need of fireboat is being urged.—W. S. Jordan, Mayor.

New Orleans, La.—Foster Olroyd, City Electrician, has recommended bettering of fire alarm system.

West Springfield, Mass.—Need of fire and police headquarters is being urged.

Kearney, Neb.—Bids will be received Nov. 8 for erection of fire house.—Geo. E. Ford, City Clerk.

BRIDGES

Miami, Fla.—Dade County Commissioners will erect several bridges.

Holyoke, Mass.—Two new bridges must be constructed early next year, one over Main st. in South Holyoke, and other over second level canal in Cabot st.—M. F. Walsh, Chairman, Board of Public Works.

Cincinnati, O.—County Commissioners are considering erection of bridge over Dunlop Creek.

Reading, Pa.—The Reading Railway Co. has offered to contribute $2,000 toward the expense of erecting bridge at Tulpehocken and Green sts. Proposed bridge will cost $35,000 and will be 506 ft. long.

Seattle, Wash.—Council is considering ordinance appropriating $10,000 to assist in construction of Stone ave. bridge.

Seattle, Wash.—Bids will be readvertised by Board of Public Works for construction of Spokane st. drawbridge.

CONTRACTS AWARDED

Hollister, Cal.—Erecting Pajaro Bridge to Cotton Bros., $2,702; other bidders: A. P. Beck, $3,118; W. J. Smith, $2,848; Western Bridge Co., $2,747.

Oakland, Cal.—Building bridge over Sausal Creek to Esterlee Construction Co.

Dover, Del.—To George W. Wallheater, through Kent County Levy Court, for constructing two bridges—one near Slaughter station and another near Bethesda Church in the Fourth District, West Dover; $1,700.

MISCELLANEOUS

Indianapolis, Ind.—Bids will be received by Board of Public Works to provide burglar proof box in City Controller's vault in new city hall building; cost about $1,000.

Indianapolis, Ind.—Council will pass ordinance requiring that new house and lot numbers, both front and rear, be used.

West Springfield, Mass.—Need of police and fire headquarters is being urged.

Enid, Okla.—Plans have been completed and bids will be asked at once for erection of jail.

Marcus, Wash.—Council is considering erection of jail.

Spokane, Wash.—Park Commission, A. L. White, President, is considering establishment of four additional parks.

Tacoma, Wash.—Metropolitan Park Board has offered $500 prize for best plan for parking rugged cliff north of City Hall; Sidney Hare, landscape architect, Kansas City, Mo., will prepare complete working plans for general scheme for improvement of waste places of Point Defiance Park.

CONTRACT AWARDED

Miami, Fla.—Erecting six buildings on poor farm to John Muller, $4,975.

BIDS RECEIVED

York, Pa.—Metallic street signs: Brilliant Manufacturing Co., Philadelphia, each 25c. f. o. b. Philadelphia, or 26c. delivered at York; Selak & Bro., York, each 24c.; Standard Sign Manufacturing Co., Pittsburg, each 32c.; George Test, York, 1,250 signs, $66.50; another variety, $432.50.

PROPOSALS

PUMPS

OFFICE OF BOARD OF CONTROL
Norfolk, Va.

Sealed proposals will be received at the office of the Board of Control, Norfolk, Va., until 12:30 o'clock P. M., November 19th, 1910, for the design, furnishing and installing three electrically driven centrifugal pumps, at Colley Ave. Sewer Pumping Station.

One 2,000 gallons per minute pump.
One 3,000 gallons per minute pump.
One 4,000 gallons per minute pump.

Instructions to bidders and specifications may be obtained upon application to the City Engineer.

The right to reject any or all bids is reserved.

THE BOARD OF CONTROL.
W. T. BROOKE, City Engineer.

BOILERS, HEATER, PUMP, ETC.

Sharpsburg, Pa.

Sealed proposals will be received at the office of the Borough Clerk, Sharpsburg, Pa., until 5 P. M., November 8th, 1910, for the furnishing and construction of 2 300-H. P. boilers, feed water heater, feed pump and necessary piping to be installed at the Sharpsburg Borough water and light plant.

Plans, specifications and proposal blanks can be had at the office of the Borough Clerk.

Certified checks in the sum of 10 per cent of the amount of bid must accompany each proposal.

The borough of Sharpsburg reserves the right to reject any or all bids.

ALBERT E. YOUNG,
Borough Clerk,
1111 N. Canal St., Sharpsburg, Pa.

METAL FURNITURE, NEW CITY HALL

DEPARTMENT OF PUBLIC WORKS
Chicago, Oct. 22, 1910.

Sealed proposals will be received by the City of Chicago until 11 A. M., Thursday, November 10th, 1910, at Room 705, City Hall Building, 200 Randolph Street, for furnishing and installing the metal furniture required in the City Hall Building, now being erected on the west half of Block 39, in the Original Town of Chicago, according to plans and specifications on file in the office of the Department of Public Works of said city, Room 705, City Hall.

Proposals must be made out upon blanks furnished at said office, and be addressed to said department, indorsed "Proposals for Metal Furniture, City Hall," and be accompanied with 5 per cent of amount of bid in money or a certified check for the same amount on some responsible bank located and doing business in the City of Chicago and made payable to the order of the Commissioner of Public Works.

The Commissioner of Public Works reserves the right to reject any or all bids. A deposit of $25.00 must be made to insure the safe return of plans and specifications.

No proposal will be considered unless the party offering it shall furnish evidence satisfactory to the Commissioner of Public Works of his ability, and that he has the necessary facilities, together with sufficient pecuniary resources, to fulfill the conditions of the contract and specifications, provided such contract should be awarded to him.

Companies or firms bidding will give the individual names, as well as the name of the firm, with their address.

B. J. MULLANEY,
Commissioner of Public Works.

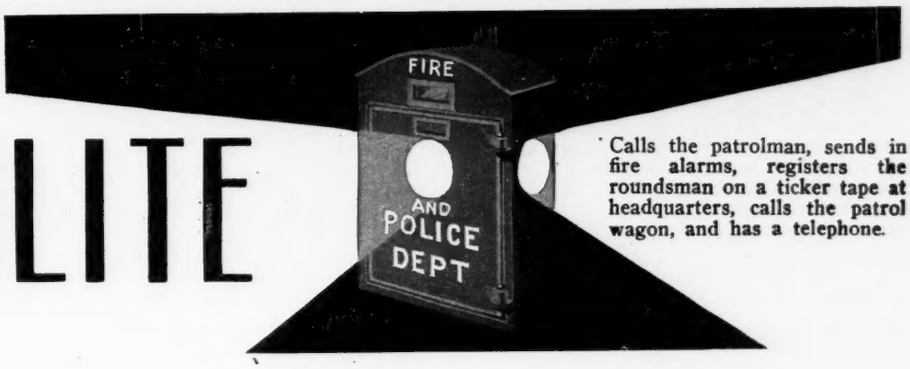
ELECTRIC LIGHT BONDS

Coleman, Tex.

The City of Coleman, Tex., now has ready for delivery $20,000 worth of electric light improvement bonds, dated July 1, 1910, 5-40s, bearing 5 per cent interest; interest payable semi-annually. Write for financial statement and other particulars to

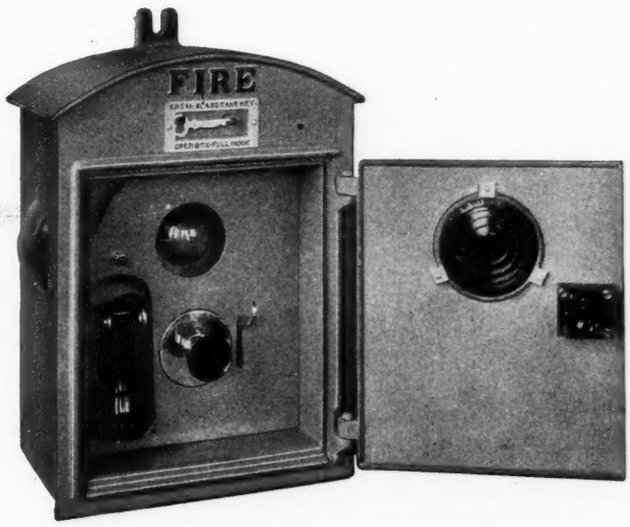
F. A. DIBRELL, City Secretary,
Coleman, Tex.

The FLASHLITE System



Calls the patrolman, sends in fire alarms, registers the roundsman on a ticker tape at headquarters, calls the patrol wagon, and has a telephone.

A Combination Police and Fire Box, with three powerful red lenses that are visible from three directions for at least 500 yards in the daytime and for miles at night.

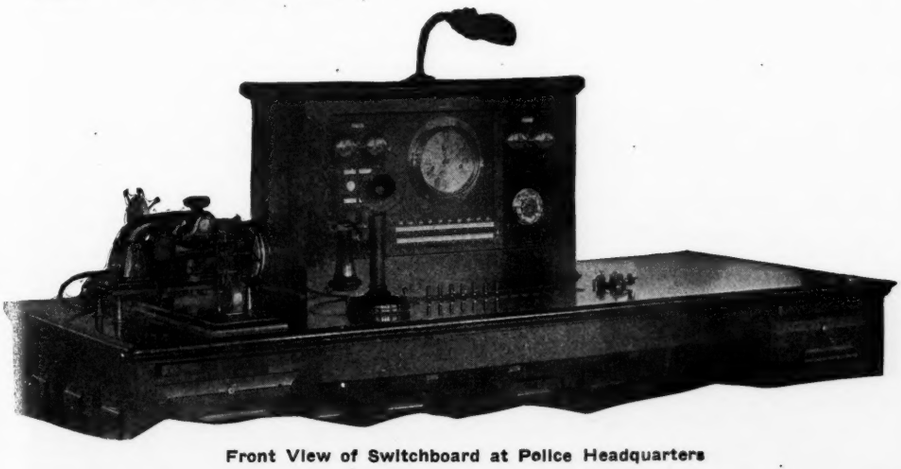


The boxes are located in each district, so at least one light is always within line of vision of the officer on that beat.

The telephone part of the equipment is of the best quality. All noisy lines and interruptions are completely removed.

The Patrol Flashlite system has passed the experimental stage. All installations are giving satisfactory results. The patrol boxes are heavily constructed and are neat in appearance. The outer door forms a moisture proof covering when closed.

The Patrol Flashlite system can be purchased outright and at a reasonable price. or a complete system may be installed and maintained, on a rental basis. Write us for details.



Front View of Switchboard at Police Headquarters

FLASHLITE

The distinctive feature of this apparatus is the FLASHLITE idea. It enables police headquarters, at any time of the day or night, to reach any roundsman *instantly*. Simply throwing a little switch lights powerful red lamps on any beat or all over the city. This signals the officers to come to the telephone for instructions.

RESERVES

Just think of it—you could assign your station reserves to regular beats and still be able to reach them as promptly as though they were asleep in the next room. The Patrol FLASHLITE System more than trebles the efficiency of your force.

FIRE ALARMS

The illustrations show the location of the public key compartment. The hook is pulled in the usual manner—nothing new or confusing. The police are also notified along with the fire department. The lamp lights when the alarm is sent in and is extinguished when the fire chief replaces the broken glass. Illuminated flash-light pilots fire department.

REGISTRATION

Roundsmen's reports are automatically printed on a ticker tape at headquarters, by simply pulling the hook—the fire alarm circuit does not operate until the glass is broken. The telephone is not used in reporting. Constant attendance is not required at the headquarters' switchboard—the automatic registrations become indisputable records of each beat.

WAGON CALL

The wagon is called by depressing the button over the receiver, after the registration hook has been pulled. No telephoning necessary.

TELEPHONES

The talking apparatus is the standard Dean Electric Indestructible equipment. Dean telephone apparatus is well known all over the world by up-to-date telephone men. Ask any Independent telephone man. The Dean Electric Company is an old established concern—see Dun's or Bradstreet's.

SEND FOR DESCRIPTIVE BOOKLET.

The Dean Electric Company

Elyria, Ohio, U. S. A.

CHEMICAL ENGINE HOUSE

OFFICE OF THE COMMISSIONERS
District of Columbia, Oct. 24, 1910.

Sealed proposals will be received at this office until 2 o'clock P. M., November 8th, 1910, for the construction of a chemical engine house at Pennsylvania Avenue and 28th Place, Southeast, Washington, D. C.

Specifications and form of proposal and all information may be obtained at the office of the Chief Clerk, Engineer Department, Roor 427, District Building.

CUNO H. RUDOLPH,
JOHN A. JOHNSTON,
WILLIAM V. JUDSON,
Commissioners, D. C.

SEWER SYSTEM

Carthage, Ohio.

Sealed bids will be received by Lewis Hall, Clerk of the Village of Carthage, State of Ohio, at the Office of said Clerk until twelve o'clock noon, November 8th, 1910, for furnishing the necessary labor and materials for the construction of the entire system of sanitary sewers for said Village, according to the plans and specifications on file in the office of Lewis Hall, Village Clerk, and Clinton Cowen, Village Engineer.

Each bid must contain the full name of every person or company interested in the same and be accompanied by a bond in the sum of one thousand ($1,000) dollars, or a certified check on some solvent bank, as a guaranty that if the bid is accepted a contract will be entered into and its performance properly secured.

Should any bid be rejected such check will be forthwith returned to the bidder, and should any bid be accepted such check will be returned upon the proper execution and securing of the contract.

Bidders are required to use the printed forms which will be furnished on application.

The right is reserved to reject any and all bids.

By order of the Council of the Village of Carthage.

LEWIS HALL,
Clerk.

SEWERS AND SEWAGE DISPOSAL

Keyport, N. J., October 20, 1910.

Sealed proposals will be received at the rooms of the Borough Council, Keyport, N. J., at 8 o'clock P. M., on the 17th day of November, 1910, for furnishing all material and doing all work necessary to the complete construction of about 10.5 miles of vitrified pipe sewers, from eight (8) to fifteen (15) inches in size with Y branches, manholes, flushing manholes, and other necessary appurtenances, and of a sewage disposal works and pumping station, including the necessary piping, grading, etc.

Plans may be seen and specifications and forms of proposal obtained at the office of the Borough Clerk, Keyport, N. J., or at the office of Clyde Potts, Engineer, 30 Church Street, New York.

Each bid must be accompanied by a certified check on a solvent bank for five thousand ($5,000). The borough reserves the right to reject any and all bids, to waive any inforomality in the bids received, and to accept any bid which it deems to be most favorable to the interests of the borough. Bids which are obviously unbalanced will be rejected.

E. E. CONKLIN,
Mayor of Keyport, N. J.
MARCUS B. TAYLOR,
Borough Clerk, Keyport, N J.

SEWER SYSTEM

Roseville, Cal.

Bids are called for on November 7th for a complete sewer system, consisting of septic tank, contact beds, and 42,275 ft. of 6", 2,640 ft. of 8", 13,151 ft. of 10" and 9,984 ft. of 12" vitrified pipe.

J. H. STINEMAN,
City Clerk.

PAVING, CURB, DRAINAGE

Dalton, Ga.

Sealed proposals on blank forms furnished by the City and addressed to the Mayor and City Council, Dalton, Ga., will be received until 3 o'clock P. M., November 22, 1910, for furnishing all material, equipment and labor for the following work.

Approximately 28,000 square yards of street paving (vitrified brick, wood block, bitulithic, granitoid and asphalt will be considered), with all necessary drainage and granite curb, as specified.

Each bid must be accompanied by a certified check made payable to the Mayor for twenty-five hundred ($2,500) dollars.

Right is reserved to reject any or all bids.

Plans and specifications can be seen at the office of the Consulting Engineers, and specifications may be obtained by writing them at Box No. 582, Savannah, Ga.

Consulting Engineers:
H. S. Jaudon Engineering Company,
Savannah, Ga.
Atlanta, Ga.
PAUL B. TRAMMELL, Mayor,
W. M. CARROLL, City Clerk.

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